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THE AMERICAN PHYSICIAN AND HIS OPPORTUNITIES FOR INCREASED SERVICE THROUGH PUBLIC HEALTH*

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BOSTON

THE 160,000,000 people of this country look to the medical profession for leadership in public health. John Doe looks to his family doctor not only for medical care but for guidance in all matters pertaining to the health of his family and his community. Therefore, the American physician occupies a unique position of trust and of responsibility for public health in the United States. In view of the present threat of world war, there has never been a time when the services of the physician in this field were more urgently needed by the nation.

Almost a generation ago one of our greatest clinicians, Sir William Osler, predicted that "preventive medicine" would be "the medicine of the future." If Sir William had been living during World War II, I am sure he would have been satisfied that his prediction was a sound one and that it was destined to be realized sooner than he had dreamed. He would have been pleased by the remarkable manner in which the medical profession of the United States contributed directly to the security of the country through conservation of both military and civilian manpower.

During World War II, military preventive medicine reached a high state of development. This great conflict was the first one in history that was not followed by major epidemic diseases. In the Army alone, more than 10,000,000 men were mobilized to serve in some of the most unhealthful regions of the world, but their health was so well protected that the disease rates were lower than in any of our former wars. There were no serious epidemics, and the disease death rate was only 0.6 per thousand per year. This figure is low compared with the rate of almost 16 per thousand during World War I, and the still higher rate of 25 per thousand during the Spanish–American War. Obviously, this wartime health program represented a real advance toward Osler's vision of the medicine of the future.

We are proud of the record made in both curative and preventive medicine during World War II. Many of the new methods and agents discovered during that period are now being used to improve civilian health. However, I believe that the most significant medical achievement of that trying period was the proof that it afforded of the ability of the medical profession to mobilize all the scientific and technical resources of the country and to co-operate unselfishly in the prevention of disease.

With this demonstration in mind, it appears reasonable to expect the profession to continue its leadership in preventive medicine and to hope that we are now well on the road to the fulfillment of Osler's dream. Therefore I welcome the invitation to take part in today's program and to talk about the opportunities that are now available to the American physician for increased service through public health.

These opportunities become apparent when one reviews the present status of public health and considers some of the unsolved health problems of today.

Public health is a young profession. Last year we celebrated its first centennial birthday. At that time we proudly retold the story of Lemuel Shattuck and the other great pioneers who gave us a new concept of effective community service through the mass prevention of disease and conservation of health. We reviewed the fundamental discoveries made before and after the turn of the last century that afforded new methods for the wholesale prevention of disease. We traced the tardy development of the young specialties of preventive medicine and public health and the slow but steady growth of voluntary and official health agencies, organized to apply this new knowledge. We noted with satisfaction the practical results: improvement in sanitation, reduction in many infectious diseases, improvement in medical care, striking decrease in maternal and infant deaths and decline in the nation's death rate.

In 1948 the national death rate reached a new low of less than 10 per thousand. At that time the life expectancy at birth had risen to an all-time high of more than 67 years, which was 26 years greater than in 1850 and 17 years greater than in

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1900. We are pleased with this record of progress, especially when it is viewed against the background of medical ignorance in the recent past. It shows that within the short period of three generations the profession of medicine has given birth to a vigorous new specialty — public health — and that this new specialty has now grown up and become effective. As the objective of public health is to keep people well, both physically and mentally, through organized community services, these advances give additional support to the soundness of Osler's prediction. The opportunities for further progress can be visualized by reviewing some of the health problems that still exist and by considering the measures required for their solution.

Let us begin with the current causes of mortality as shown in the following tabulation. According to these figures the most common causes of death

TABLE 1.

ORDER OF INCIDENCE	CAUSES OF DEATH IN UNITED STATES	1948 DEATH RATE PER 100,000 PERSONS
1	Heart disease	378
2	Cancer	137
3	Hemorrhage, brain	103
4	Accidents (all forms)	69
5	Pneumonia and influenza	66
6	Kidney disease (nephritis)	61
7	Tuberculosis	33
8	Diabetes	31
9	High blood pressure and hardening of arteries	23
10	Suicide	10

are chronic degenerative diseases, accidents and respiratory infections, including influenza, pneumonia and tuberculosis.

When the 1940 death rates for various groups of causes of death are compared with the rates of 1900, as in Figure 1, it is apparent that there has been a spectacular decrease in the fatalities associated with childbirth and those caused by some of the infections that commonly attack children and young adults. On the other hand, this shows that people still die of venereal and intestinal diseases that are preventable and most of which can be cured. Thus, a glance at these mortality rates indicates at least two important national needs. The first is for a more effective application of the curative and preventive knowledge now at hand; the second is for an increase in research aimed at the discovery of better life-saving and prophylactic methods.

Examination of the statistics for sickness and disability shown in Figure 2 reveals still more problems. Communicable diseases of childhood still head the list of reported infections; venereal diseases come next, followed in sequence by the respiratory, insect-borne and intestinal groups of infections. These conditions, with chronic degenerative diseases, accidents and mental illness, are responsible for most of the nation's large bill for medical care and hospitalization. The possibility of reducing some of this economic burden through

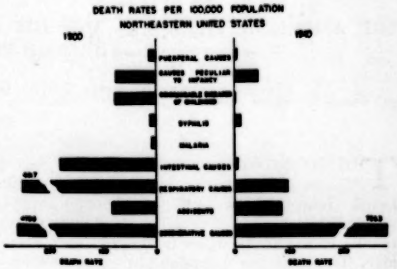

FIGURE 1.

prevention becomes apparent when one considers the following causes of illness.

Maternal and child health. The health problems of maternity and infancy seem to be the logical

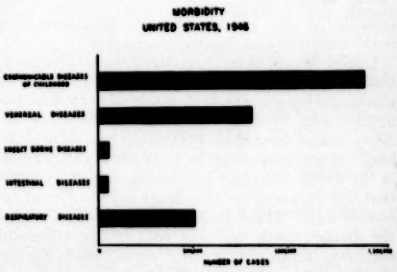

FIGURE 2.

ones with which to begin. Improvements in the practice of obstetrics have brought about a great decrease in maternal mortality within the last decade. In 1937 the maternal death rate for the

country was about 6 per 1,000 live births and by 1947 it had reached a low of 1.3. The infant death rate also declined from a high rate of over 100 in 1900 to an estimated 32.2 per thousand in 1947 — a reduction of about 66 per cent. During the earlier period the decrease was gradual; it was undoubtedly influenced by various environmental factors, including better sanitation, safer milk supplies, general improvement in living conditions and better medical practice. The death rates have decreased more rapidly in recent years because of improvements in specialized pediatric care and child-health services. The improvements in child health, however, have not been uniform throughout the country. The recent survey conducted by the Academy of Pediatrics shows that in certain areas the care available to mothers and infants is still inadequate.

Communicable diseases of children. The communicable diseases of childhood now cause fewer deaths than in the recent past, but they still rank first among the infectious diseases. Fifty years ago the combined death rate for measles, scarlet fever, whooping cough, diphtheria and meningitis was 75 per 100,000. In 1940 the rate was only 2.5 — a reduction of about 97 per cent. This reduction reflects the general improvement in pediatric care and treatment, particularly in the use of more effective chemotherapeutic agents. Nevertheless, these diseases have not been controlled. In 1946 measles ranked first among all the communicable diseases reported in the United States, with a total of about two thirds of a million cases. The report for 1949 was about the same. In fact, 5 of the 10 leading infections reported in 1946 were childhood diseases. Chicken pox was responsible for 250,000 cases, mumps for 160,000, scarlet fever for 118,000 and whooping cough for 104,000.

Pediatricians as a group really practice preventive medicine. They are concerned just as much with keeping their patients well as with treating them when they are ill. Obviously, the search for more effective preventive methods with which to protect children against disease should be continued.

The experience with diphtheria shows what can be done with a preventable disease. Since 1921 there has been a remarkable decrease not only in mortality but in morbidity. The wartime decrease in civilian immunization programs was followed by a postwar increase in diphtheria. In 1946, for example, there were 16,000 cases and 1,300 deaths. However, in 1949 there were only 8,000 cases. Diphtheria can be eradicated if well organized immunization programs are conducted continuously in all our communities.

Poliomyelitis affords an example of an important unsolved health problem. There is still no effective agent for either its cure or its prevention. Its incidence in the United States last year was the highest on record — 42,000 cases. It is hoped that the extensive researches supported by the American people through the National Foundation for Infantile Paralysis and other agencies may eventually provide effective control methods.

Respiratory diseases. The acute respiratory diseases, including the common cold, influenza and the pneumonias, are still important causes of sickness. In 1947 influenza ranked first among the 10 leading infections, with a total of almost half a million cases; pneumonia was tenth, with 78,000 cases. The common cold also remains a baffling problem. Recent estimates indicate that colds cause an annual loss to the people of the United States of about 1,500,000,000 days and that the annual cost is at least $2,000,000,000. The present researches must be continued to discover better means for preventing all these respiratory infections.

The morbidity and mortality from pulmonary tuberculosis have decreased during the last quarter century. The death rate dropped from about 100 per 100,000 in 1921 to around 35 in 1946, yet in 1947 it ranked eighth among the 10 leading infections and in 1948 it was seventh among the causes of death. There are now about a half million active cases in the United States. The campaign to eliminate this disease should be expanded, using modern methods of mass x-ray detection, treatment and rehabilitation. BCG vaccine is being used in this country on a limited scale among persons who are continuously exposed to tuberculosis patients.

Intestinal infections. The acute enteric infections are preventable. Typhoid and the paratyphoid fevers in the military forces have been controlled by vaccination. Except for veterans, however, a large proportion of the civilian population has not been immunized. Therefore the decrease of typhoid in the latter group is attributed largely to environmental sanitation, including improvements in sewage disposal and the protection of water, milk and other foods. Last year only 2800 cases of typhoid and 1300 cases of paratyphoid fever were reported for the entire country. The record for other intestinal diseases is less satisfactory. In 1945 the dysenteries, diarrheas and enteritis caused about 55,000 infections and more than 11,000 deaths, and last year there were more than 50,000 cases of dysentery alone. The continued appearance of these preventable filth-borne infections indicates a defect in our health protection.

Insect-borne diseases. The important insect-borne diseases of this country include malaria, dengue fever, murine typhus, sylvatic plague, Rocky Mountain spotted fever, tularemia and various types of virus encephalitis. Their methods of transmission are well known, and they are all preventable. Nevertheless, little progress has been made toward eradication of sylvatic plague, which is endemic in rodents throughout the west. Extensive investigations are now under way to develop more effective

control methods for the various types of insect-borne encephalitis and the rickettsial diseases.

The present malaria situation, shown in Figure 3, indicates what can be accomplished by aggressive application of effective methods for control. Only a few decades ago this disease was a major cause of chronic disability and economic loss in our southern states. Throughout World War II the Army conducted a gigantic mosquito-control pro-

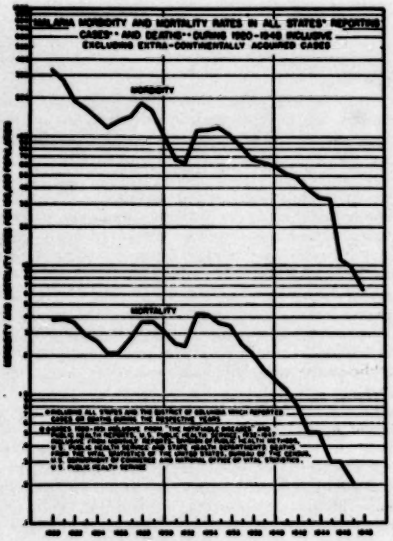

FIGURE 3.

gram in all military installations in this country and arranged for similar work to be done in the surrounding areas by the Public Health Service. This joint program cost more than $30,000,000. Its effectiveness was reflected in the low malaria rates among troops in the continental United States.

Since the war, the Public Health Service and certain state health departments have continued the drive to eradicate malaria, using various new methods developed through military research, especially DDT for house spraying and new antimalarial drugs. As a consequence, malaria has now reached an all-time low.

The Health Commissioner of Mississippi, Dr. Felix Underwood, recently told me that for some time his state has offered a bonus of $10 to any doctor who could submit to the Department of Health a blood slide proving the existence of a new case of malaria. He said that despite this inducement not a single case was reported during the year. The incidence of malaria for the entire United States in 1949 was only 4000 cases. This low rate is a real triumph for preventive medicine and public health.

Venereal diseases. The venereal diseases are still prevalent, although we have known for years how to cure and prevent them. In 1946 gonorrhea was still second among the 10 leading infections — a position that it continues to occupy — with almost half a million reported cases. Syphilis rated third, with about the same number of reported infections. In 1945 syphilis killed 14,000 people and was twelfth among the diseases causing death. There has been a slight decrease in both diseases during the last year; but they continue to be serious health problems that can and should be eliminated.

Accidents. The statistics of the National Safety Council show that 98,000 Americans were killed and over 10,000,000 were injured by accidents in 1948. The council estimated that the annual cost was more than $7,000,000,000. When the number of working years lost through premature accidental death is added to the actual cost of these deaths, accidents take rank as one of the most serious health problems of the country. Here is a national challenge.

Chronic degenerative diseases. Because of the increasing span of life, the chronic degenerative diseases now hold first place among the causes of death. Moreover, they are responsible for an enormous amount of costly sickness and disability. Improvements in the control of these diseases will require a better understanding of their underlying causes. There is an urgent need for more basic research aimed at discovery of better methods for prevention, treatment and rehabilitation. The most important preventive services now available are those that can be applied only by the practicing physician on an individual basis. They include the early diagnosis of incipient disease by means of periodic physical examinations, followed by correction of defects found and advice about how to maintain normal health. This kind of preventive service requires initiative on the part of the patient, a close personal relation between the patient and physician and adoption by the latter of the preventive viewpoint. Thus prevention of premature death from heart disease, cancer, diabetes and the other conditions in this group rests primarily with the general practitioner. This situation will continue until better prophylactic methods can be discovered.

Official health agencies are becoming increasingly active in the attack on these diseases. They

are promoting adult health through campaigns to educate the public, development of facilities that will lead to better diagnosis, treatment and rehabilitation by the medical practitioner and research.

Mental diseases. Mental diseases also constitute a major national health problem. According to Menninger (1948) one fourth of the patients in our general hospitals are there because of emotional disturbances. Almost 300,000 Americans are admitted to mental hospitals each year, and about 3,000,000 American children have emotional and behavioral disorders. The solution of this problem will be difficult. Much research and the united efforts of the professions of medicine and public health will be required.

In this rapid survey we have considered only a few of the country's major health problems. All of us can think of others, such as those created by occupational and industrial hazards, nutritional deficiencies, poor housing, the pollution of our streams with sewage and industrial wastes and the need to conserve and protect the nation's water supplies.

New problems that may occur at any time must also be anticipated. For example, pandemic influenza may return, or the country may be invaded again by yellow fever from the jungles of South America or Africa, by cholera or plague from India or by other serious diseases from various parts of the world. If so, the general practitioner and the health officer must both be prepared to take whatever action is needed to prevent the spread of such diseases.

Finally, we must be prepared to meet the entirely new threat of unannounced atomic and biologic warfare. This threat makes it necessary to plan for community protection against new disease conditions that may well be more difficult than anything experienced in the past.

Because of the present extremely dangerous international situation and the daily threat of World War III, all these health problems assume a dominant role that demands our most serious attention. The important challenge to the medical profession today is not socialized medicine, because few Americans want to be socialized, or compulsory sickness insurance, which is equally unpopular. The real challenge now is the urgent need to strengthen our total health defenses in the shortest possible time.

An atmosphere of confusion, petty controversy and political bickering is not conducive to the strengthening of our health defenses. Moreover, the job is too big for either the medical practitioner or the specialist in public health alone. The time has come for clear, objective thinking, realistic planning and the vigorous action required to safeguard the health of the entire country and to conserve its manpower. Strong united leadership, backed by the whole-hearted co-operation of all the specialists of medicine and public health, is needed now.

I have no intention of trying to outline a procedure for setting up a national program of health. However, I do wish to emphasize the fact that the success of any health program will depend on the support given it by the medical profession. The medical practitioner has always been the backbone of American health. Because of his relation to his patient, he has a unique opportunity to practice modern preventive medicine at the grass roots. He can provide public health to his patients, their families and their communities. If he belongs to a hospital staff he can see to it that the objectives of the hospital are broadened to include disease prevention and community health. As recently stated by Brigadier General Stanhope Bayne-Jones (1949), "There appears to be a wide acceptance, among bodies that have studied modern hospitals, that the hospital is a social institution with special capacities and obligations to function as a center of medical care and health services and that in this conception preventive medicine has an 'overall significance.'" The practitioner can also assist by active participation in community health affairs and by giving his full support and advice to the official and voluntary health agencies.

There are other important ways in which the physician can contribute to the cause of public health. He can support education and research in this field, and he can help in the recruitment of public-health specialists needed to meet the present shortage. At present the total yearly number of graduates from the 10 postgraduate schools of public health in this country is not sufficient to meet the national demand for medical leaders in this specialty. Many excellent positions are now unfilled in county, state, national and international health agencies. This reflects a critical need for further improvement in the teaching of preventive medicine in our medical schools. There is need to present the subject in a way that will show the promising young medical student how challenging and satisfying a career in public health can be. The physician can help in recruitment by encouraging his sons and daughters and the people of his community to work for public health — if not as professional workers, as volunteers and public-spirited citizens.

Finally — and most important of all — I believe that the American physician can render a vital service to the people by providing united professional leadership to expedite the early development of plans for a sound national health program.

In 1947, at the Convocation of the American College of Physicians, held in this city, I made a specific proposal for the provision of such leadership, which I still consider sound. My recommendation was "that a permanent national advisory

and planning council on health be organized with broad official representation, including members elected from the American College of Physicians, the American College of Surgeons, the American Medical Association, the American Public Health Association and all the other leading organizations competent to deal with medicine and public health. Such a representative council could concern itself with long-term planning for: (1) the improvement of teaching in medicine and public health; (2) the stimulation of medical research; and (3) the development of a sound program for the education of the public in the principles of health. In addition, this council could act in an advisory capacity to the government in all matters of health legislation."

I am pleased to be able to add that two years later action was taken that was in conformity with my recommendation. In 1949 there was established in the City of New York an organization named the Inter-Association Committee on Health. The associations participating in this constructive new venture are: the American Medical Association, the American Dental Association, the American Nurses' Association, the American Hospital Association, the American Public Health Association and the American Public Welfare Association. The appointed members consist of three representatives from each of the 6 organizations, and these must be officers of the constituent associations or members who have important policy-making responsibilities.

The primary objective adopted by the Inter-Association Committee on Health is "to study and discuss various phases of health care in the interest of improving the health of the nation." This will require a continuous search to discover the health needs of the country and an equally persistent search to discover how these needs can be met. The following special committees have been appointed: the Committee on Elements of a Public Health Plan, with Dr. Hugh R. Leavell as chairman; the Committee on Facilities and Personnel for Medical Care and Public Health, of which Dr. Ellen C. Potter is Chairman; and the Committee on Financing of Personal Health Services, with Dr. Louis Bauer as chairman.

Thus, for the first time, we have the machinery whereby the leading organizations of medicine and health can sit down together and work for the common good of the country.

I believe that the establishment of this Inter-Association Committee on Health is potentially one of the most important advances of our time. If it receives the full backing of the individual members of the professions that it represents, it will bring to our country the united leadership that is now so urgently needed.

We all agree, I am sure, that the man in the street and the lawmaker have a right to expect this sort of united leadership. I know we can all agree that the health of the American people is sufficiently important to warrant calm, objective planning on a permanent basis by experts who represent the best available professional skills and judgment. I am also sure that the American physician now has his greatest opportunity to serve the nation, by giving his complete support not only to good medical care but to preventive medicine and public health. The future security of the country will reflect the manner in which he fulfills this responsibility.

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ACID DÉBRIDEMENT OF BURNS WITH PHOSPHORIC-ACID GEL*

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BOSTON

THE introduction of a satisfactory chemical method for the early débridement of burns would simplify a perplexing problem. For many years attempts have been made to find some agent that would selectively digest or remove the necrotic slough that follows severe burning. Since Connor and Harvey[1] in 1944 first reported the use of pyruvic-acid starch paste as a suitable agent, few clinical reports have been published on the use of this method of débridement.

With a severe burn the open wound is largely responsible for serious electrolytic and protein aberrations resulting from the tremendous loss of serum. The persistence of a slough covering the area fosters infection, delayed healing and late contractures. After measures to combat shock, the early removal of this tissue by chemical or surgical means and the closure of the wound are the important objectives in the local treatment of burns. When the area is debrided, a temporary or often permanent covering of the open wound may be effected by the application of split-thickness skin grafts. This must be done immediately to prevent the formation of scar contractures in the granulating areas.

With the commonly accepted use of petrolatum or boric-ointment strips or saline packs as local dressings, it is often considered satisfactory to have the severely burned site ready for grafting in one month's time. In 10 severe burns treated by this method Cannon[2] found the average time of slough separation to be twenty-five days. Surgical débridement is often employed alone or in conjunction with this to hasten the removal of dead tissue. Since the cleavage plane between nonviable and viable tissue develops late, many living elements are traumatized or removed by this debriding process, especially with deep second-degree burns. The need for a selective method of removing the necrotic area without damage to viable elements has been stressed.[3] The acid débridement of wounds has been useful in accomplishing these ends. The mode of action is dependent on prolonged lowering of the pH of the wound surface. A plane of cleavage begins at the wound margins and proceeds to the deeper planes. Separation of nonviable tissue occurs earlier, and often in one sheet, whereas any epidermal islands present either at the periphery or base of the ulcer are not damaged.

After experimentation with this method on animals, Connor and Harvey[1, 4] reported the successful treatment of more than 30 severely burned patients with the application of a 0.1 molar pyruvic acid water-starch gel. Early separation of sloughs occurred. Russo[5] reported the use of pyruvic-acid dressings in the débridement of 14 cases of second- and third-degree burns. Separation of the eschar, which required 3 or 4 redressings, occurred from eleven to twenty-two days after the burn and from three to sixteen days after the initial application of the acid dressing.

Pyruvic-acid paste proved to be unsatisfactory for many reasons. The preparation of the starch paste was an involved procedure, which had to be performed daily. Because of the many different types of grain used in the manufacture of starch, the composition was variable, resulting in marked differences in the clinical results. Then, too, pyruvic acid was unstable and not easily obtained. These objections prompted Sulzberger, Kanof and Baer[3] to investigate different methods in an attempt to find other agents that would compare favorably with pyruvic-acid starch paste. More than 1500 experimentally produced burns were treated with various agents to determine the most satisfactory combination of acid and vehicle. Hydrochloric, mandelic, tartaric, citric, lactic and phosphoric acids were among those tested. These workers concluded that only phosphoric acid was equal to pyruvic acid in regard to efficiency of slough removal and low degree of irritation. The other acids were as effective in higher concentrations but caused a severe dermatitis of the surrounding skin.

In the determination of the most satisfactory vehicle certain criteria of suitability were established. These were: chemical compatibility with the acid, free diffusion and delivery of the acid, no irritation of the surrounding skin by itself or in combination with the acid, no systemic toxicity on absorption in large quantities, suitable consistence for application to all parts of the skin and easy and rapid preparation and facility in distribution and storage. Among the satisfactory combination of acids and vehicles were K-Y jelly with 0.4 molar pyruvic or phosphoric acid, methyl cellulose-water gels with 0.1 molar pyruvic or phosphoric acids or pectin Ringer's solution glycerin gel with 0.1 molar pyruvic acid. Further experimentation in conjunction with Mattocks and Lazier[6] produced a hydroscopic powder that would yield a suitable acid gel on the addition of water. These agents were almost as effective as pyruvic-acid starch-paste gel.

At the Boston City Hospital the acid débridement of burns has been employed in hastening removal of the slough. This was found to be advantageous not only in the earlier preparation of a

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site suitable for grafting but in the marked reduction of total hospital time, which is often prolonged with the usual methods of treatment. Phosphoric acid (85 per cent) was used as the debriding agent. This was added to a water-soluble vehicle* to form a stable 0.7 molar (5 per cent) phosphoric-acid gel (pH, 1.02) that met the qualifications prescribed by Sulzberger, Kanof and Baer.[3] Over a twelve-month period the pH of the solution and the physical characteristics did not vary. Previously a weaker mixture (0.4 molar) had been employed with fair results. However, the success of the method depended on the maintenance of a layer of mixture in contact with the wound to combat neutralization of the acid by the wound fluids. Elevation of the pH would detract from the effectiveness and delay the separation of the slough. For this reason we used the stronger mixture to guard against any neutralization. No noticeable increased discomfort to the patient or irritation of the surrounding skin was caused by the greater concentration. This was due in part to the much smaller quantity of gel, which could be accurately applied and restricted to the burned area. At no time did we apply more than 300 cc. of mixture to an extremity, in contrast to the 3000 cc. recommended with the use of pyruvic-acid starch paste.[4]

With a few exceptions the technic of dressing the wounds was similar to that described by Connor and Harvey.[4] As soon as peripheral vascular collapse had been completely controlled and attempts to maintain an adequate protein and electrolyte balance begun, the debriding agent was applied. Dressings of the smaller burns were changed on the wards, with sterile precautions. When a significant percentage of the body was involved, this procedure was often more easily effected in the operating room. Immediately after application of the phosphoric-acid gel some discomfort was occasionally felt by the patient. This was quite variable and consisted of a burning sensation lasting from fifteen to thirty minutes. Pontocaine applied topically or incorporated in the solution was ineffective in preventing this. However, premedica-

TABLE 1. *Summary of 11 Cases of Burns Debrided with Phosphoric-Acid Gel.*

CASE	EXTENT OF AREAS BURNED AND AREAS TREATED WITH PHOSPHORIC-ACID GEL	NO. OF DAYS BEFORE ENTRY THAT BURN OCCURRED	NO. OF DAYS AFTER ENTRY WHEN DEBRIDEMENT WAS INSTITUTED	NO. OF DAYS AFTER DEBRIDEMENT WAS INSTITUTED WHEN SLOUGH SEPARATED	NO. OF DAYS AFTER INSTITUTION OF DEBRIDEMENT WHEN BURN GRAFTED	NO. OF DAYS AFTER INSTITUTION OF DEBRIDEMENT WHEN BURNS SO TREATED WERE COMPLETELY HEALED	NO. OF DAYS AFTER ENTRY WHEN BURNS NOT TREATED WITH PHOSPHORIC-ACID GEL WERE COMPLETELY HEALED
J. G.*	Third-degree burn of 35 per cent body surface. Right arm treated with phosphoric-acid gel	0	14	11	16	73	117
D. G.*	Third-degree burns of right leg, right forearm, left lower leg. Second-degree burns of face, neck and arms. Left leg treated with phosphoric-acid gel	0	10	7	11	19	87
J. M.*	Third-degree burn of entire arm except hand. All treated with phosphoric-acid gel	0	10	9	9	47	P§
A. H.*	Third-degree burn of leg (measuring 12 x 6 cm.). All treated with phosphoric-acid gel	21	0	6	6	15	P
C. M.*	Third-degree burn of chest (35 x 25 cm.), Treated with phosphoric-acid gel	0	4	7	10	36	P
J. C.*	Third-degree burns of chest (20 x 15 cm.); 2nd-degree burns of wrist, hand, neck, face. All except face treated with phosphoric-acid gel	0	5	11	13	31	P
L. W.*	Third-degree burns of foot (5 x 8 cm.). All treated with phosphoric-acid gel	7	4	10	13	20	P
J. R.†	Third-degree burns of right thigh and groin (30 x 13 cm.), treated with phosphoric-acid gel	4	1	7	13	21	P
H. G.†	Five 3rd-degree burns of left thigh (4, 6 x 2½ cm.; 1, 5 x 2 cm.); 2 treated with phosphoric-acid gel	7	1	9 and 10	22‡	40‡	41‡
J. H.†	Deep 2nd- and 3rd-degree burns of thigh (10 x 3 cm.), treated with phosphoric-acid gel	5	1	8	No graft necessary	21	P
J. S.†	Deep 2nd- and 3rd-degree burns of buttock (12 x 8 cm., 5 x 3 cm.). All treated with phosphoric-acid gel.	10	6	5	No graft necessary	14	P

*Mechanical débridement used along line of cleavage after phosphoric-acid gel had begun to debride slough.

†No mechanical débridement used. Slough separated entirely by acid débridement.

‡Although the areas treated with phosphoric-acid gel were ready for grafting in ten days, all grafting was delayed until the other areas were ready, twenty-two days after entry.

§P = entire burn treated with phosphoric-acid gel.

*Surgical Lubricant, Parke Davis & Co. This contains sodium alginate, glycerin and tragacanth, with small amounts of boric acid and dibexylin (1:1000) as a germicidal agent.

tion with small amounts of demerol or morphine adequately relieved the discomfort.

At the first dressing a sterile scalpel was used to make parallel incisions in the slough. The cleavage plane between nonviable and viable tissue begins at the wound edges. Making the incisions increases the accessibility of the agent to the site of its activity, namely, the wound margins. No anesthesia was required because necrotic slough alone was incised. A narrow dam of vaseline gauze about one-half inch high was built up about the periphery of the burn to prevent the mixture from seeping away. Later we found that felt strips impregnated with petrolatum were most satisfactory in confining the mixture to the wound itself. The wound was covered with a thin layer of phosphoric-acid gel, and petrolatum strips and fluffed gauze were applied over this. Dressings were anchored in place with adhesive plaster. In dressing an extremity the gel was sometimes spread on a sterile towel that was subsequently wrapped about the burned area and sealed with petrolatum gauze. Dressings were changed daily to facilitate close observation of the effects of the agent. However, effectiveness was not impaired when dressings were changed every other day. When the cleavage plane became apparent the separation of partially debrided and undermined areas could be hastened mechanically without anesthesia, using a sterile scissors and forceps. This was not always necessary. Viable elements were preserved, since the dissection was not carried beyond obviously demonstrated areas of separation. The technic of redressing was extremely simple and required no previous experience.

Occasionally a dermatitis of the surrounding skin developed. This was always mild and at no time necessitated discontinuance of therapy. Areas affected were coated with petrolatum or zinc-oxide ointment.

After separation of the slough in many of the deep second-degree burns many epithelial islands were often seen scattered over the base and at the periphery of the wound. These were apparently not damaged by the debriding agent. This was also evident in burns that were partly superficial and partly deep. We believe that superficial burns were not converted to deeper ones. Areas with first-, second- and third-degree burns could be treated beneath the same dressing with safety. We noted that healing in the acid-debrided second-degree burns seemed to be accelerated. This acceleration was probably only relative and was perhaps occasioned by the clean wound that is left after separation of the slough, allowing uninhibited growth of epithelium. After débridement the wounds were dressed with a wet weak chlorinate solution, which was applied until the operating schedule permitted skin grafting or, in the case of superficial second-degree burns, until healing had occurred.

Case Reports

Case 1. H. G. (B. C. H. 1316076), a 67-year-old vagrant, was admitted to the hospital seven days after he was burned when sleeping against a hot radiator during an alcoholic debauch. This resulted in 5 almost identical small third-degree burns on the outer surface of his left thigh. There was full-thickness destruction of tissue down to the fascia lata; a firmly attached greenish-brown eschar covered each wound. After measures were taken to eradicate the pediculosis present parallel incisions were made in the uppermost, central and lowermost burns. The two upper burns were treated with wet saline dressings changed every four hours. Boric-ointment strips and fluffed gauze dressings were placed over the central burn. These were changed every three days. The lower 2 burns were covered daily with a thin layer of phosphoric-acid gel. All the wounds were adequately sealed and isolated from each other with tincture of benzoin and adhesive plaster so that there was no seepage of material from one wound to another. On the sixth day of treatment a mild dermatitis developed about the lower burns. However, this did not necessitate discontinuance of therapy. On the ninth day the burns treated with phosphoric-acid gel showed complete separation of the slough of one burn and 50 per cent separation of the incised slough. The remaining attached portion of slough had developed a well defined plane of cleavage and separated the following day. At this time the burn covered with boric-ointment dressings showed no evidence of slough separation, and those treated with saline packs showed about 20 per cent separation of one burn and no separation of the other. By the twenty-first day of therapy the burn treated with boric ointment had 70 per cent slough removal. Saline packs had effected complete separation of 1 burn and 80 per cent débridement of the incised slough. Wet chlorinate dressings were applied to all burns and on the following day all wounds were covered with Thiersch grafts. The wounds healed rapidly at equal rates.

Comment: Crude control studies were established, treating 5 almost identical burns with 3 different methods. Débridement of burns with phosphoric-acid gel was complete in eleven days, whereas those burns treated with boric-ointment dressings and with wet saline dressings were not completely free of slough in twenty-one days. This would indicate that the "wetness" alone of the agents was not responsible for the debriding action. Added effectiveness of incising the slough to increase the number of wound margins was not demonstrated with these burns.

Case 2. J. C. (B. C. H. 1269388), a 44-year-old man, entered the hospital about twelve hours after sustaining second-degree burns of the right wrist and hand, first- and second-degree burns of the right neck and face and an area of third-degree burns on the right anterior chest measuring 20 by 15 cm. The patient was a chronic alcoholic, who had been drinking heavily during the week preceding admission.

On admission the burns of the chest and right arm were treated with petrolatum strips and a firm pressure dressing. The following day the patient developed delirium tremens and remained in that state for three days. Five days after admission phosphoric-acid gel was applied to the burn on the chest. The wound at this time was covered with a firmly attached thick slough. The phosphoric-acid gel dressings were applied every two to three days until eleven days after onset of acid débridement therapy, when the wound was clean and ready for grafting. Two days later a split-thickness graft was applied to the debrided area on the chest. The graft took almost in entirety and healing occurred rapidly. The patient was discharged thirty-six days after entry, with all the burned areas healed.

Three days after leaving the hospital the patient fell while on a drinking spree and lacerated the newly grafted area on

the chest. An infection resulted, and he was again admitted to the hospital. Weak chlorinate dressings were applied for six days, the area was grafted and he was discharged nine days later.

Comment: After separation of the eschar a clean red granulating base remained, which was ready for immediate grafting.

CASE 3. J. G. (B. C. H. 1256730), a 42-year-old man, entered the hospital several hours after severe burning of his neck, face, right arm, right axilla, thorax, abdomen, right thigh and leg and inner aspect of the left thigh and leg suffered when the house in which he was sleeping caught fire. Except for those on his face and neck, the burns were all third-degree, covering an estimated 35 per cent of the body surface.

Intensive treatment to combat shock and electrolyte imbalance was instituted. Immediate local treatment consisted of the sterile application of petrolatum gauze and pressure dressings to all the burned areas. Dressings were changed every four to eight days for the first sixteen days, only petrolatum and pressure dressings being used. The right arm was first treated with phosphoric-acid gel on the fourteenth day after entry. Three such dressings were applied, at three- and four-day intervals. The remaining burn areas were treated with petrolatum gauze as before. Eleven days after the institution of acid débridement the left arm was clean and the green necrotic slough had been removed. This was in contrast to most of the other areas of the body, which showed no separation of an adherent slough. Thirty days after entry and sixteen days after the beginning of the phosphoric-acid treatment, the first grafts were applied to the right arm. Subsequently grafts were applied every seven to eight days. Epithelization of the right arm was completed fifty-seven days later, eighty-seven days after entry. Phosphoric acid was also used on the left thigh to assist in the débridement. After 2 applications a clean granulating base remained.

The other areas treated with petrolatum gauze were mechanically debrided as the slough separated. Eleven separate grafting procedures were performed in all, and healing of these areas was complete eighty-seven days after the first grafting, 117 days after entry. From this time to the date of discharge a long period of rehabilitation ensued. The patient was discharged ambulatory 256 days after admission. On discharge he had a foot drop on the left and a flexion contracture in the right axilla.

Comment: At that time the results that we later came to expect from acid débridement in such extensive burns were not clearly defined. Therefore, treatment with phosphoric-acid gel was delayed for sixteen days and then confined to the burns of the right arm and left thigh. Earlier slough removal and healing of wounds occurred in much less time in those areas treated with acid than in those treated with petrolatum gauze. Moderate discomfort coincidental with redressing with phosphoric-acid gel was adequately controlled with morphine. The selective, safe action of phosphoric acid could be more advantageously utilized in such large burns by applying it to all areas. Viable epithelial structures will be spared, thus reducing the total area where grafting is necessary and providing an optimum recipient site for the grafted skin.

CASE 4. J. R. (B. C. H. 1299277), a 34-year-old man, sustained severe burns of his right upper thigh and groin when he fell asleep while smoking in bed. The wounds were self-treated at home with several "burn ointments" for four days. On admission the burned area was covered with a greenish-yellow adherent eschar. Petrolatum dressings were applied, and on the following day on the ward 8 parallel incisions were made through the slough to increase the margins of the wound. No anesthesia was required. Phosphoric-acid gel dressings were applied every day. These caused some discomfort lasting about fifteen minutes after application. However, this was adequately controlled by premedication with demerol (100 mg.). Some separation of the slough was noted at the wound edges at the first redressing. On the seventh day it had completely separated except where held in place by a few strands of fibrous tissue. The red granulating base was dressed with wet chlorinate packs until the operating schedule permitted application of Thiersch grafts to the area. Only the central part of the ulcer required grafting, since viable islands of epithelium were found at the periphery of the wound. Healing had occurred by the eighth postoperative day.

Comment: The increased wound margins following multiple incisions in the eschar hastened formation of a line of cleavage. Preservation of the epithelial islands about the wound edges illustrates the selectivity of phosphoric acid when the tissue destruction varies in depth.

CASE 5. J. S. (B. C. H. 1293834), a 63-year-old laborer, sustained severe chemical burns on his right buttock from local applications of a phenol solution for relief of intergluteal chafing. He was admitted to the hospital ten days later, with cellulitis of the margins of the burn. The patient was given penicillin, 100,000 units every four hours, and wet Enzymol dressings were applied to the burn areas. This was continued for six days, without any noticeable separation or digestion of the slough. By this time the cellulitis had subsided. Daily dressings of phosphoric-acid gel were begun. A mild burning discomfort following application of the gel was relieved by premedication with morphine. At the first redressing 25 per cent of the slough had separated. By the fifth day separation of the slough in one piece was complete, leaving a reddish, vascular, granulating base, which did not bleed. Because many epithelial islands were present on the surface of the wound, grafting was considered unnecessary. Wet chlorinate dressings were applied, and healing progressed rapidly.

Comment: Again rapid débridement of necrotic tissue occurred, preserving the underlying living epidermal elements. The safety of the acid gel is demonstrated by its selective action in removing only nonviable tissue, which provided an optimum site for remaining epithelial islands to flourish.

CASE 6. D. B. (B. C. H. 1286942), a 41-year-old woman, entered the hospital in critical condition about two hours after she was burned during a drunken stupor in which she fell asleep in bed while holding a lighted cigarette. She sustained third-degree burns of the entire right leg, right forearm and left lower leg and superficial and deep second-degree burns of the face, neck, left arm and hand and right upper arm.

For immediate local treatment the burns were covered in the operating room with petrolatum-gauze strips and a pressure dressing. Her subsequent course was complicated early by an episode of pulmonary edema following massive blood-replacement therapy. She gave a history of having had rheumatic fever at the age of 9 with subsequent development of mitral valvular disease.

Ten days after entry the dressings were completely removed. At this time all the burns were treated by the reapplication of petrolatum-gauze and pressure dressings, except for the left lower leg, which was treated with phosphoric-acid gel. The latter dressings were changed every two days. Seven days after the application of the gel the slough on the left leg had separated enough so that with a little sharp dissection it was easily removed. The base was clean and ready for grafting. At that time the other areas of third-degree burn on the right leg, thigh and arm were covered with a firmly adherent slough. The left leg was grafted eleven days

after the beginning of acid débridement, twenty-two days after entry. Healing occurred rapidly. The other areas were mechanically debrided and grafted twenty-five days after entry. The "takes" in these areas were poor, and repeated grafting was done every ten to fourteen days. Eighty-seven days after admission these wounds were healed, except for a 3-cm. square area on the right forearm, and the patient was discharged.

Comment: The areas treated with acid gel were debrided rapidly, and healing occurred much earlier than in areas treated with petrolatum gauze and mechanical débridement. The favorable recipient site prepared by the phosphoric-acid gel insured more successful results with subsequent grafting.

Discussion

Since the series of burns reported from this hospital by Clowes, Lund and Levenson[7] in 1943 were treated with facilities similar to those of the present series, we have endeavored to set up a rough comparison of results obtained. The severity and extent of burns were judged by the same criteria. Of 19 severe burns in the former series treated with petrolatum or boric-acid ointment, 8 had 4 per cent or more of the body surface involved and 11 had 3 per cent or less. The average time of treatment required to remove gross slough was twenty-seven days. In the present series of 11 cases treated with phosphoric-acid gel, 3 had 4 per cent or more involved body surface and 8 had 3 per cent or less. The average time in all cases for separation of the slough was eight days. This marked reduction of time allowed earlier closure of the wound with grafts, thus restricting the formation of granulation tissue and scar contractures. A more favorable recipient site for the graft was prepared. This was most important in the more severe burns, in which donor areas were scarce and a maximum percentage of successful "takes" was essential. The shorter period of hospitalization and earlier wound healing had decided economic significance to both patient and hospital.

On some of the smaller burns, phosphoric-acid gel débridement was employed for trial purposes where surgical excision might have been more practical; early excision is certainly important in the treatment of some burns. However, radical surgical débridement is often crippling and destructive in large burns of varying degree in which there is considerable difficulty in establishing an early accurate estimation of the severity, especially in the differentiation of deep second- and third-degree burns. When there is scarcity of donor areas, surviving viable elements of epithelium and important underlying structures may be conserved by the use of phosphoric-acid gel. In 2 of our cases burns originally judged to be third-degree revealed many viable epithelial islands after separation of the slough; healing occurred rapidly without grafting. Acid débridement may be instituted immediately after peripheral vascular collapse has been controlled, thus eliminating the anesthesia, loss of blood, destruction of viable tissue and added tissue trauma that surgical débridement entails.

We were interested in comparing the effect of wet dressings with that of chemical débridement. Lam and Puppendahl,[8] working on experimental animals, suggested that the "wetness" and maceration of tissue were responsible for the favorable effect produced by chemical débridement, rather than the lowered pH of the wound surface. They believed that cotton dressings wetted with distilled water were as effective as pyruvic-acid starch paste. Sulzberger, Kanof and Baer[3] demonstrated more beneficial effects with the use of acid than with the use of the control, "blank" starch paste. The results in Case 1 seem to support this conclusion. Here a series of burns on one leg were of similar area and severity, having been produced simultaneously by the hot flanges of a radiator. The burns were treated individually with wet saline dressings, boric-ointment dressings and phosphoric-acid gel, with adequate isolation of each wound. Those burns treated with phosphoric acid were completely debrided in ten days, whereas burns treated with wet saline dressings and boric-ointment dressings required more than twenty-one days before total débridement occurred.

Both the higher concentration of acid gel and daily redressings of some of the burns resulted in reduction by two days of the average time of slough separation. No significance can be deduced from a small series of cases, but we believe that the increased concentration maintained a lower pH on the wound surface. Much smaller amounts of the acid gel could be applied when the more concentrated mixtures were used.

Summary

With severe burns, rapid separation of the necrotic eschar and early wound closure are necessary for good healing and prevention of excessive scarring. Acid débridement of the slough has been successful in preparing an optimum site for grafting and in hastening early closure. Phosphoric-acid gel was employed in 11 cases and is a simple, safe, selective and rapid method of débridement. The course of 6 of these patients is presented in summary.

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DELIRIUM AND COMA PRECIPITATED BY OXYGEN IN BRONCHIAL ASTHMA COMPLICATED BY RESPIRATORY ACIDOSIS*

HENRY D. BEALE, M.D.,† IRVING W. SCHILLER, M.D.,‡ MEYER H. HALPERIN, M.D.,§ WILLIAM FRANKLIN, M.D.,¶ AND FRANCIS C. LOWELL, M.D.||

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ALTHOUGH the hazards of many therapeutic procedures are reasonably well known, clinicians need to be reminded occasionally that measures thought to be perfectly safe may be dangerous under certain special circumstances. Oxygen in high concentrations, as often administered to patients with a variety of respiratory, cardiovascular and neuromuscular conditions, may at times be more harmful than beneficial. From the manner in which oxygen is prescribed, however, one would doubt that its potentially deleterious effects are widely recognized, although they have been known for some time.

Oxygen given in high concentrations (50 to 100 per cent) for long periods may be irritating to the respiratory tract and when given under high pressure (2 to 5 atmospheres) may cause severe neurologic manifestations. These effects are unrelated, so far as we are aware, to those that we are about to discuss.

As early as 1921, it was observed that in some patients an increase in the arterial carbon-dioxide content occurred during and after breathing 50 to 100 per cent oxygen.[1] This is most marked in patients with structural pulmonary emphysema or fibrosis of the lung, in which chronic hypoxemia, hypercapnia and acidosis exist. Indeed, such patients may become delirious, stuporous or comatose when oxygen is administered in high concentrations.[2-6]

We have recently studied a patient with severe bronchial asthma who became stuporous or comatose on several occasions when he was given oxygen. It was finally suspected that oxygen was aggravating an existing respiratory acidosis, and laboratory studies proved this to be true. The unique aspect of this case was the absence of other significant pulmonary disease. Pulmonary function was within normal limits after the asthma was completely relieved. Although there must be many similar cases, none is reported in the literature to our knowledge, nor have we previously recognized this phenomenon in asthma.

CASE REPORT

R. K. (M. M. H. 344554), a 53-year-old man, developed symptoms of bronchial asthma for the first time after a "cold" in February, 1949. He was hospitalized three weeks after the onset of symptoms and treated with intravenous aminophylline, ephedrine, epinephrine, sedation and bed rest. During a three-week period he gradually improved and was then discharged. In July, 1949, he was again hospitalized with severe asthma; at this time he had fever and a productive cough. Treatment with rest, antibiotics and bronchodilator drugs was effective, and after two weeks he was discharged improved but not completely free of asthma. In September, 1949, severe asthma recurred and it was necessary for him to be hospitalized again. His condition was poor in the hospital; he stated that on one occasion, while having severe asthma, he "passed out and came to eight hours later in an oxygen tent." We have been unable to determine whether or not he was given oxygen before this episode of unconsciousness. Because his condition was so poor, he was transferred to the Evans Memorial Hospital on October 30, 1949.

Past history. In 1916 he had pulmonary tuberculosis and was hospitalized for fifteen months. In 1918 he had a recurrence of tuberculosis, requiring further hospitalization for nine months. He was then discharged as an arrested case.

Family history. Two sisters had died with tuberculosis. There was no history of hay fever, asthma or other allergy in any member of his family.

Physical examination. The significant physical findings on admission were limited to the respiratory system. He was obviously having great difficulty in breathing, and wheezing was audible at the bedside. The chest was hyperresonant throughout; breath sounds were obscured by loud musical rales and rhonchi, which were prolonged and more marked during expiration. Cyanosis was not mentioned in the admission note.

Laboratory findings. A blood Hinton test was negative. The urine revealed a slight trace to ++ albumin; it was otherwise normal. The corrected sedimentation rate (Wintrobe) was 6 mm. in one hour. The hematocrit was 56 per cent, the hemoglobin 16.9 gm. per 100 cc. The white-cell count was 14,600, with 69 per cent polymorphonuclear leukocytes, 12 per cent lymphocytes, 8 per cent monocytes and 11 per cent eosinophils. The nonprotein nitrogen was 38 mg. per 100 cc., the sodium 144.5 milliequiv. and the potassium 4.7 milliequiv. per liter. The venous carbon-dioxide content was 34 and the chloride concentration 93.5 milliequiv. per liter. Sputum cultures revealed alpha-hemolytic streptococcus, *Neisseria catarrhalis*, *Staphylococcus albus*, *Hemophilus influenzae*, *Monilia albicans*, *N. flavus* and nonhemolytic streptococcus. The blood culture was negative. Skin tests showed no specific allergies. Chest x-ray films taken at the time of admission showed numerous scattered calcifications at the hila and in the parenchyma of both lungs, with no evidence of active tuberculosis. There was moderate bronchial thickening and peribronchial infiltration at the right base. The heart was normal in size and contour. Chest x-ray films taken on January 16, 1950, showed no change in the appearance of the lungs. Films obtained at that time in maximal inspiratory and maximal expiratory positions showed good motion of the diaphragm and chest wall and seemingly adequate pulmonary ventilation (Fig. 1).

*From the Evans Memorial, Massachusetts Memorial Hospitals, and the Department of Medicine, Boston University School of Medicine.
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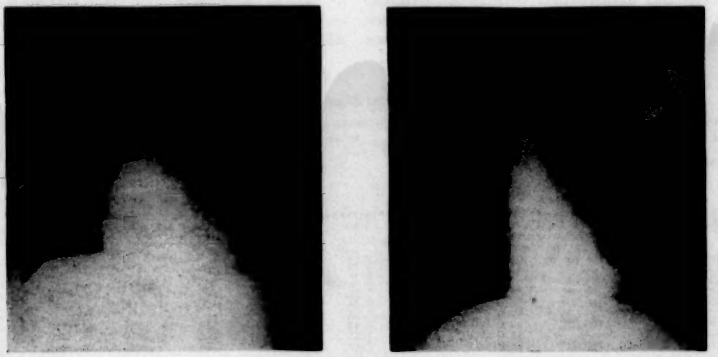
Clinical course. After admission to this hospital on October 30, 1949, severe asthma continued; cough was productive of large quantities of frothy sputum. He was treated with intravenous infusions of aminophylline and subcutaneous epinephrine and with barbiturates for sedation. An order was written for oxygen by nasal catheter, as necessary for cyanosis. His symptoms continued to be more or less severe in spite of large amounts of medication, and he seemed to be approaching exhaustion. At 11:20 a.m. on November 6, 1949, he was given oxygen at a rate of 6 liters per minute by nasal catheter for thirty minutes and again at 9:00 a.m. on November 7 for the same length of time. On the second occasion the nurse's notes stated that he became drowsy during the cortisone on asthma he was given large doses of cortin (whole adrenal cortical extract), the nearest available substitute. Cortin was of questionable value, but the patient did improve somewhat. Since the deleterious effect of oxygen was not yet suspected, he was given oxygen intermittently for respiratory distress, and observations similar to those given above were recorded in the nurse's notes. On November 30, when he again had severe asthma, he was given continuous oxygen by nasal catheter at a rate of 6 liters per minute. Over a period of eight hours he became progressively less responsive and finally comatose. The role of oxygen was suspected, and when oxygen was discontinued the patient awakened, although he became cyanotic. Studies made then and subsequently are summarized in Table 1. They show that there was hypoxemia, hypercapnia and acidosis. When oxygen was administered the hypoxemia was relieved, but carbon-dioxide retention was increased and acidosis became more severe. He was treated with 300 mg. of cortisone acetate* over a three-day period and showed considerable improvement. Treatment with cortisone was discontinued because none was available. He continued to receive intensive treatment with bronchodilator drugs, and oxygen was given in low concentrations for cyanosis. Although improved, the patient continued to have severe asthma. Beginning on January 4, 1950, he again received cortisone, in a daily dose of 100 mg., for twelve days. Marked improvement occurred, but symptoms were not completely relieved and pulmonary function was still impaired. Ten days after treatment with cortisone was stopped, the patient had a severe relapse and was again treated, starting on February 4, with 100 mg. of cortisone per day for fifteen days and then 200 mg. per day for nine days. At the end of this time he became free of symptoms, and measurements of pulmonary function were within normal limits. After discharge from the hospital on March 2, he required 100 mg. of cortisone daily to prevent return of symptoms. Prior to a course of treatment with ACTH for a comparative study, cortisone was discontinued on May 26, and asthma returned within five days. Symptoms became progressively more severe, and on June 6, 1950, ten days after treatment with cortisone was stopped, ACTH was started in daily doses of 80 mg. (Armour standard). Symptoms cleared completely after ten days, and the dose was



A B

FIGURE 1. *Chest Roentgenograms, taken January 16, 1950.*
A = Maximum expiration. B = Maximum inspiration.

period of oxygen administration. Continuous nasal oxygen was started at 11:45 a.m. on November 7, and the following excerpts from the nurse's notes indicate the result.

11/7/49	11:45 a.m.	Continuous nasal oxygen at 6 liters per minute started.
	1:00 - 3:00 p.m.	Fairly comfortable but drowsy and apathetic.
11/8/49	2:00 a.m.	Patient not responsive. Doctors notified.
	6:00 a.m.	Condition unchanged.
	7:15 a.m.	Responding slightly.
	8:45 a.m.	Patient becoming very drowsy again. No response to questions.
	10:45 a.m.	More alert. Nods in response to questions. Continuing to be more alert during this period.
11/9/49	7:40 a.m.	Nasal catheter withdrawn. Patient refused to have it reinserted. Oxygen given by mask but patient very uncooperative and confused. Wanted to get out of bed. Said he was going to die.
11/10/49	4:30 a.m.	Oxygen catheter pulled out. Refuses to have any more oxygen. Doing fairly well without it.

During this period the patient continued to receive vigorous treatment with drugs, and because of the reported effect of

*Obtained from Merck & Company, Inc., and hereinafter referred to as cortisone.

gradually decreased. At present he is well and being maintained on 20 mg. of ACTH daily. He has occasional wheezes, which are relieved by rectal administration of aminophylline, and he occasionally uses Isuprel from a nebulizer. His pulmonary function continues to be within normal limits for his age.

Comment

On the basis of history alone we should perhaps have suspected what would happen when this patient was given oxygen to breathe. It is clearly stated in the intern's admission note that while being treated for severe asthma at another institution the patient had become unconscious and had awakened eight hours later in an oxygen tent. It was not clear, however, whether or not oxygen had been administered prior to the lapse into unconsciousness. On two occasions after his admission to the Evans Memorial Hospital he became irrational, stuporous or comatose several hours after oxygen therapy was started. Excerpts from the nurse's notes indicate the sequence of events, and one can see that on one occasion, during rather prolonged oxygen administration, he seemed to have episodes of stupor or coma and delirium and at times was awake and perfectly rational. During the second period of oxygen therapy he seemed to become progressively less responsive and finally comatose. When the role of oxygen was suspected and oxygen was discontinued he gradually awakened, even though he became quite cyanotic. Perhaps he would have awakened had oxygen been continued, but at the time it appeared that he would not survive. The history of tuberculosis was confusing and led us first to reason that fibrosis and emphysema had resulted from healing of the tuberculous foci and that chronic respiratory insufficiency existed because of this. It was thought that the recent development of severe asthma had aggravated this previously existing condition, causing further hypoxemia, carbon-dioxide retention and acidosis and that the added effect of oxygen, causing further increase in acidosis, had then precipitated the mental changes observed. However, in Table 1 are listed data that show that the patient actually had normal lung function after his asthma had been completely relieved.

Discussion

Patients with pulmonary emphysema or fibrosis of the lungs who have chronic hypoxemia with carbon-dioxide retention and acidosis may manifest various mental and neurologic changes when given 50 to 100 per cent oxygen to breathe for prolonged periods.[3-6] It has been stated[2, 3] that the arterial blood pH does not decrease, but other investigators[4, 7] have found that acidosis is aggravated. Although Barach[3] has reported a case of pulmonary emphysema in which recovery occurred during the continued administration of oxygen after the production of coma, Davies[8] has reported a death occurring under similar circumstances but perhaps hastened by the administration of 10 per cent carbon dioxide to stimulate respiration.

Comroe, Bahnson and Coates[4] have made extensive studies of pulmonary function in a large series of patients with chronic hypoxemia due to pulmonary fibrosis or emphysema. Their observations, which coincide with those of others,[7, 8] indicate that high concentrations of oxygen may cause a decrease in pulmonary ventilation, an increase in carbon-

Table 1. *Studies of Arterial Blood and Pulmonary Function.**

Date	Arterial Oxygen Saturation		Arterial Carbon-Dioxide Tension		Arterial pH		Vital Capacity	Residual Capacity	Total Capacity	Residual Capacity / Total Capacity ×100
	Breathing Air	Breathing Oxygen†	Breathing Air	Breathing Oxygen†	Breathing Air	Breathing Oxygen†				
	%	%	mm. of mercury	mm. of mercury			cc.	cc.	cc.	%
12/ 1/49	74.6	99.0¶	103.0	142.0	7.22	7.11	—	—	—	—
12/ 4/49	80.6	92.2‖	83.0	90.0	7.27	7.24	—	—	—	—
12/21/49	79.6	94.0¶	65.0	75.0	7.31	7.27	—	—	—	—
1/ 3/50	85.9	100.0**	55.0	85.0	7.36	7.19	2800	3450	6250	55.1
1/16/50	90.0	100.0**	53.0	64.0	7.36	7.29	4600	3000	7600	39.0
2/ 4/50	59.8	—	64.0	—	7.28	—	—	—	—	—
3/ 1/50	93.8	100.0**	44.0	41.0	7.44	7.48	5350	2500	7850	32.0
3/22/50	89.5	—	44.0	—	7.39	—	5000	2950	7900	37.0
6/22/50	90.8	100.0**	48.0	47.0	7.42	7.43	4700	—	—	—
Predicted normal values	93–96		41		7.41		4000	1700	5700	30

*Aminophylline 0.5 gm. intravenously was given 30 minutes before each set of studies.

†Arterial blood was drawn after 30 minutes breathing O_2 where studies before and after O_2 were done.

‡Minute volume, tidal volume and respiratory rate were calculated as the average during a 1-minute period, first on air, then on O_2.

§Pulmonary dead space estimated to be 200 cc.

¶O_2 supplied through a nasal catheter at a rate of 6 liters/min.

‖O_2 supplied through a nasal catheter at a rate of 2 liters/min.

**O_2 supplied from demand regulator by mask or mouthpiece so that the patient breathed 99.6% O_2.

dioxide retention and a decrease in arterial pH. As may be seen in Table 1, the patient here reported exhibited precisely the same abnormalities in the arterial blood and developed the same changes during the administration of oxygen. For example, on January 3, 1950, when the patient had severe asthma, the inhalation of oxygen at 6 liters per minute was followed by marked depression of ventilation. Although the minute volume of respiration did not change the rate became more rapid and the tidal air was greatly decreased. If one estimates the pulmonary dead space to be roughly 180 to 200 cc., the tidal air was then little more than enough to ventilate the trachea and bronchi. This was associated with an increase in carbon-dioxide tension

TABLE 1 (*Concluded*).

DATE	RESPIRATORY MINUTE VOLUME‡		RESPIRATORY RATE‡		RESPIRATORY TIDAL VOLUME‡		ESTIMATED EFFECTIVE RESPIRATORY TIDAL VOLUME§		NITROGEN IN ALVEOLI AFTER BREATHING 99.6 PER CENT OXYGEN FOR 7 MIN.	SEVERITY OF ASTHMA
	BREATHING AIR	BREATHING OXYGEN	BREATHING AIR	BREATHING OXYGEN	BREATHING AIR	BREATHING OXYGEN	BREATHING AIR	BREATHING OXYGEN		
	liter/min.	*liter/min.*			*cc.*	*cc.*	*cc.*	*cc.*	%	
12/ 1/49	—	—	—	—	—	—	—	—	—	+ + + +
12/ 4/49	—	—	—	—	—	—	—	—	—	+ + +
12/21/49	—	—	—	—	—	—	—	—	—	+ + + +
1/ 3/50	8.2	8.2	22	28	370	290	170	90	10.4	+ + + +
1/16/50	—	—	—	—	—	—	—	—	5.3	+ + +
2/ 4/50	—	—	—	—	—	—	—	—	—	+ + + +
3/ 1/50	—	—	—	—	—	—	—	—	2.5	0
3/22/50	—	—	—	—	—	—	—	—	3.9	+
6/22/50	12.8	11.7	23	22	550	525	350	325	—	0
Predicted normal values	8	9	16	18	500		300		<2.5	—

from 55 to 85 mm. of mercury and a fall in pH from 7.36 to 7.19. These changes were accompanied by virtually complete saturation of the arterial blood with oxygen. On another occasion (December 4, 1949), oxygen was administered by nasal catheter at a rate of 2 liters per minute, and the arterial blood became about 92 per cent saturated, with little increase in the acidosis. After the patient's condition had improved under treatment with cortisone and the pH and carbon-dioxide content of the arterial blood had returned to normal, ventilation and intrapulmonary-gas-mixing studies were within normal limits for his age. At this time (Table 1, March 1, 1950) the inhalation of oxygen no longer caused significant changes in arterial carbon-dioxide tension or pH, even though the arterial oxygen saturation rose to 100 per cent.

Comroe and others[4] suggest the following mechanisms as possible causes of the mental changes observed in some of these patients during oxygen therapy: carbon-dioxide narcosis, cerebral vasospasm, reflex depression of the cerebral cortex by high oxygen tension, increased cerebrospinal-fluid pressure and direct depression of the cerebral cortex by high oxygen tension. The first of these mechanisms seems most probable, and the following chain of events seems reasonable: (1) the existing high arterial carbon-dioxide tension or lowered pH (or both) depresses rather than stimulates the respiratory center; (2) lowered pH and elevated carbon-dioxide tension then fail to stimulate respiration; (3) hypoxemia becomes the main stimulus to respiration, acting through the aortic and carotid chemoreceptors, which respond to lowered arterial oxygen saturation; (4) administration of oxygen in concentrations sufficient to raise the arterial saturation removes this stimulus, the ventilation falls and the rate of elimination of carbon dioxide is diminished; (5) increased amounts of carbon dioxide are retained in the blood, causing the carbon-dioxide tension to rise and the pH to fall; (6) acidosis deepens and coma may ensue. The high partial pressure of oxygen in the inspired air permits complete or almost complete saturation of the blood under these conditions. The manner in which acidosis produces coma is not entirely clear. Simpson[9] has found that inhalation of oxygen caused a rise in cerebral spinal-fluid pressure in patients with emphysema and not in patients with normal lungs. Administration of 5 per cent carbon dioxide to patients with normal lungs, however, caused a rise in cerebral spinal-fluid pressure, indicating that retention of carbon dioxide by patients with emphysema when breathing oxygen is the probable mechanism behind the rise in cerebral spinal-fluid pressure. Since it is known that

elevated cerebral spinal-fluid pressure alone can produce coma, this mechanism may play a part in the production of mental changes in the patient described above.

The adverse effects of oxygen described above occur only in respiratory acidosis. Patients with pulmonary insufficiency who are receiving oxygen should be watched carefully for signs of impairment of the sensorium. If necessary, oxygen therapy can be discontinued or the rate of flow decreased. Measurement of the carbon-dioxide content, pH and oxygen saturation of the arterial blood are very helpful in establishing the presence of acidosis and in determining at what rate of flow oxygen may be safely given. If suitable facilities are not available, determination of the carbon-dioxide content or combining power of the venous blood is helpful in conjunction with clinical observation of the patient while he is alternately breathing air and oxygen. Mere clinical observation alone of the patient may be sufficient.

Summary

Oxygen, as employed clinically, may be dangerous to some patients who suffer from chronic hypoxemia and carbon-dioxide retention due to any cause. Under these circumstances, oxygen should be given cautiously in low concentrations and with careful observation of the patient. A case of bronchial asthma is reported in which respiratory acidosis was aggravated by the administration of oxygen. This was manifested clinically by delirium, stupor and coma, relieved by withdrawal of oxygen therapy. The administration of oxygen caused decreased pulmonary ventilation, increased retention of carbon dioxide and a lowering of the pH of the arterial blood. Pulmonary function was within normal limits when the asthma was relieved, indicating that the changes observed were not due to any permanent structural change in the lungs, such as emphysema or fibrosis.

Since submitting this manuscript, we have encountered a second patient with bronchial asthma and respiratory acidosis in whom the administration of oxygen was followed by the deleterious effects described above.

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A SURVEY OF PRESENT-DAY TREATMENT OF DIABETES MELLITUS

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EXAMINATION of present-day therapy of diabetes mellitus reveals considerable lack of uniformity in both the aims and the clinical details of management, as expressed in current textbooks and literature. For example, an attempt to determine the proper aim of therapy by means of these sources yields a bewildering range of advice. One finds the more conservative writers advocating normoglycemic control[1-3] or aglycosuria throughout the day, with normalization of only the fasting blood sugar.[4] Still more liberal are the "middle-of-the-road" therapeutists, who allow moderate hyperglycemia and glycosuria.[5] Finally, there are the most liberal, or free-diet, therapeutists, who disregard all but symptoms, acidosis and weight status.[6] Similar wide variations are found in the published clinical methods of diet-prescription writing and the follow-up study of patients.

It is important to clarify this apparent confusion in the fundamental policies of diabetes therapy. It should first be emphasized that the above-mentioned divergent opinions, however considered they may be, are only those of the individual authors quoted. A more valid index of actual present-day practice would be that of a large group of specialists in the field of diabetes. Accordingly, representative members of the American Diabetes Association (1 out of 3 members) were sent questionnaires. This study of the clinical management of diabetes covered such specific details as aims of treatment, the patients' diet technics and the physicians' methods of calculation of diets and nutritional requirements.

From the 300 physicians polled, 225 replies, complete enough for analysis, were received. Geographically, the replies represented a true representation of the membership of the various states.

Results

Analysis of the 225 replies showed that the preference for the various aims of therapy could be divided into 5 groups as follows: 156 (70 per cent) aimed at normoglycemia, 14 (6 per cent) at aglycosuria after meals and 39 (17 per cent) at aglycosuria before meals only; 10 (4 per cent)allowed mild glycosuria and 6 (3 per cent) disregarded the

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presence or degree of glycosuria entirely.* Of the last group, 3 did not indicate a desire to control symptoms. Of the 156 "normoglycemics," 37 per cent had a further aim of sugar-free fasting urines and only 25 per cent of sugar-free specimens after meals.

Table 1 summarizes the findings for the various groups with respect to the food-measurement technics taught to their patients. It is noteworthy that weighing as the *sole* method was required by only 6 per cent of the "normoglycemics." Fully 86 per cent of this conservative group felt that they could achieve their aims by food measurement through servings alone. The advocacy of less meticulous estimation (or none at all) naturally increased as the aims of therapy became less stringent. However, not a single physician in this entire survey advocated complete freedom from dietary restraints; even the 16 in the liberal "glycosuric" group required their patients to measure food (by servings).

Another measure of quantitative accuracy is the subclassification of vegetables and fruits on the basis of carbohydrate content. The 5-10-15-per-cent classification of vegetables was taught to their patients by 90 per cent of all the physicians. A greater subgrouping into 4 to 6 types of vegetables by carbohydrate content was found only among a few of the "normoglycemics" (8 per cent). The use of fewer than 2 classes of vegetables was found only among a minority of the "glycosurics" (20 per cent).

Table 2 summarizes the technics used by the physicians in their diet calculations. Of the 225 replies, 206, or 95 per cent, indicated an interest in the maintenance of proper weight by the patient. Only 8, or 4 per cent, believed that they could estimate this proper weight by visual estimation, physical habitus, "previous healthy weight," weight in early adult life alone and so forth without the use of standard height-weight tables.

Only 25 per cent (Table 2) used some type of standard formula to estimate the daily caloric needs of the patient. Almost none of the "glycosurics" used such a formula, although a majority of them (two thirds) did follow the patients' weight curve in order to satisfy minimum caloric needs. It is noteworthy that this rough and practical index was also found sufficiently informative by a similar majority of the "aglycosurics" and even of the "normoglycemics." This was so even for "normoglycemics" who still required the weighing of food by their patients.

Table 2 also indicates that a larger percentage in each group wished to know the caloric content of the prescribed diet than actually calculated the theoretical daily caloric needs of the patients. The greatest interest, however, was displayed in the weight of each constituent of the diet: carbohydrate, protein and fat (87 per cent). This was almost equally true among all groups, for even among the "glycosurics" 70 per cent made such calculations.

TABLE 1. *Relation of Methods of Food Estimation to Aim of Treatment in Diabetes.**

AIM OF TREATMENT	WEIGHT ONLY	SERVINGS ONLY OR WEIGHT AND SERVINGS	SERVINGS AND CEI OR CEI ALONE OR FREE DIET AND CEI†
	%	%	%
Normoglycemia (156 physicians)	14	86	0
Aglycosuria before or after meals (53 physicians)	6	89	5
Mild glycosuria aimed at or degree of glycosuria disregarded (16 physicians)	0	70	30

*Expressed in terms of percentage of total in each group; all of each group answered these questions.
†CEI — carbohydrate elimination injunctions.

TABLE 2. *Relation of Aim of Treatment to Type of Medical Control Calculations Used in Diabetes.*

GROUPS BY AIM OF TREATMENT*	DAILY CALORIC NEEDS BY FORMULA	TOTAL CALORIES PRESCRIBED DAILY	NO. OF GRAMS OF CARBOHYDRATE, PROTEIN AND FAT PRESCRIBED DAILY
	%	%	%
"Normoglycemics" (156)	24	32	90
"Aglycosurics" (53)	32	36	81
Average of all, including "glycosurics" (225)	25	33	87

*Expressed as percentage of total in each group.

*Hereafter, the first group, composed of those who aimed at normoglycemia, will be referred to as "normoglycemics," the second and third groups as "aglycosurics" and the fourth and fifth groups as "glycosurics." These groupings were made because of close similarity of opinions of the constituent members and in order to secure large enough numbers in each class.

Moreover, these were almost uniformly expressed to the nearest gram.

Discussion

This survey indicates that the overwhelming majority of diabetes specialists are still convinced of the advisability of aiming at normoglycemia as an ideal whenever feasible. However, their individual replies revealed their recognition of the necessity for occasional compromise with this ideal for practical reasons. These included the physiologically unstable, the severe diabetics and those with complications of a medical or surgical nature.

Of those professing to aim for normoglycemia, more physicians used fasting than used after-meal urine-sugar tests as practical indices of control. This leads to the conclusion that many so-called "normoglycemics" really aim for normal fasting blood-sugar levels, unlike those others who aim for twenty-four-hour normoglycemia.[7]

The simpler serving technic of food measurement was considered sufficiently accurate for the attainment of their higher goals by both the "normoglycemics" and "aglycosurics" (together, 93 per cent of the total). As a further index of the simplicity of their regimen, almost all the members of these two groups use a limited classification of vegetables. The latest prototype of such a regimen has recently been published in detail and represents a further simplification of the popular exchange method of patient routine.[8] The greatest argument of the spokesmen for the "glycosuric" groups has been the psychologic irksomeness of the more rigid regimens.[6, 9] However applicable those arguments may be to the weighing methods, they lose their force when applied to the simple exchange technics now in popular use.

Ideal weight with avoidance of obesity as a goal apparently continues to underlie the therapy of all groups equally and to a high degree (95 per cent). This was so even among the "glycosurics." However, the calculation of the daily caloric needs of new patients apparently no longer requires the use of metabolic formulas, even among the majority of "normoglycemics." This stems largely from the recognition of the inherent inaccuracy of any such formula in practical application.[10] Furthermore, most physicians do not even bother to calculate the actual caloric content of the diets they prescribe. The fact is that they are mainly interested in the dietary constituents — carbohydrate, protein and fat, expressed in grams — together with the effect of such diets on the weight curve.

These physicians probably use certain basic diets that satisfy the minimal nutritional requirements and are found by experience to fit various needs for weight change and activity. Although expressed in terms of grams of carbohydrate, protein and fat (C, P, F) and not in calories, they nevertheless serve the same function. At the same time, the knowledge of the amounts of the individual food constituents fulfills several functions at the time of prescription. The minimal protein need of 1 gm. per kg. of body weight is assured. The exclusion of excess fat (over 120 gm.) is avoided for both palatability and possible effect in accelerating arteriosclerosis. Few physicians expressed a continued interest in carbohydrate-fat ratios but most were undoubtedly interested in reducing the carbohydrate intake to a minimum compatible with a psychologically acceptable diet.

On follow-up visits, the above-mentioned carbohydrate, protein and fat calculations, when applied to actual intake, further serve to show reasons for weight change in terms of misunderstanding or deliberate infractions of the dietary regimen. Weight gain is usually found to be due to excess intake of carbohydrate.

This survey has shown that among the physicians most interested in diabetes there is a surprising uniformity in policy and details of practice. They aim at the greatest normalcy of carbohydrate metabolism with what appears to be the simplest of technics. When they do compromise with the ideal of normoglycemia, they do so because of specific, practical indications and not as a matter of policy.

For the great majority of these physicians, the main problem is to secure sufficient co-operation from the patient in observing the diet. Most diabetics require only a relative constancy of the daily dietary intake (to ± 10 to 15 per cent) for the attainment of complete normoglycemia. However, a large number of these patients refuse to exercise even this small degree of self-discipline. This fact should not be allowed to reflect on the validity of the basic aim of normoglycemia. Frequently this lack of co-operation has its origin in a deeply rooted, lifelong compulsive polyphagia.

Although a few physicians (16) tolerated glycosuria as a matter of policy, even they limited the glycosuria by some dietary restraints. In fact, their technics, when examined closely, proved to be nearly the same as that of the "normoglycemics." How, then, can we reconcile the considerable differences in the results of these two groups?

The basic difference actually lies in the variable stringency with which the two groups enforce the constancy of their patients' food intake. This factor, when combined with the degree of co-operation of the patient, determines the result achieved. The "glycosurics" choose to enforce only a small degree of dietary restraint, but this is a far cry from the almost complete dietary license advocated by some authors.[6] In every case, because of the human element, it is found wise deliberately to set the sights higher than the expected goals.

Summary

A survey was made of the aims and technics of therapy of diabetes mellitus of 225 members of the American Diabetic Association.

The aim of therapy is normoglycemia among 70 per cent and aglycosuria among 23 per cent; glycosuria is allowed by 7 per cent.

The household serving technic is now the preferred technic of patient food measurement in all groups. Similarly, all physicians have simplified vegetable classifications to 3 and fruit to 1 group, probably by the exchange method.

Most physicians attempt to maintain the proper weight of their patients according to height-weight tables. Only 25 per cent estimate by formula the daily caloric needs of the new diabetic. All groups endeavor to maintain the proper management of their patients by determining the weight at each visit and changing the diet accordingly.

Only a third of all groups calculate the actual daily caloric intake of the patient; 80 to 90 per cent calculate the total grams of carbohydrate, protein and fat of the diet. The latter figures form the basis for calculating the initial diabetic diets or the need for subsequent changes.

In almost all respects, the methods of therapy of all groups are surprisingly similar. The divergency of results in the face of similar technics can best be explained only by the manner of their application by physicians and by the degree of co-operation of the patients.

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FIFTY YEARS OF MEDICAL PROGRESS

MEDICINE AS A SOCIAL INSTRUMENT: MEDICAL SOCIAL SERVICE

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SOCIAL service integrated with organized medical care and public-health activities as we know them today may be traced back to the initiative, idealism and consistent interest of two remarkable men — Sir Charles Loch of London and Richard C. Cabot of Boston.

This is not the occasion for review of the well known record of the services of the Church in aid to the sick and helpless through the centuries. Many doctors and laymen associated with hospitals in the past have called attention to the adverse social conditions pressing upon the sick and have made efforts to help. Nurses, with their long and admirable history of visiting nursing in the homes of the poor in our cities, and with the extraordinary development of public-health nursing, have their own story to tell.

Here we are concerned with the development, through the past half-century, of the purposeful employment of social workers in hospitals and dispensaries and in organizations for promotion of public health. Although we are dealing especially with the history of medical social work in this country, we must not omit reference to the development in England that started a decade before Richard Cabot established social service at the Massachusetts General Hospital in 1905.

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Charles Stewart Loch, after graduating from Balliol in 1872, served in the Secretarial Department of the Royal College of Surgeons in London for three years. In 1875 he accepted the position of secretary to the London Charity Organization Society, which had been founded in 1869 for the following purposes: "(1) The Organization of Charitable Relief; (2) The Repression of Mendicity; (3) To Improve the Conditions of the Poor." The medical charities became a subject of major interest of the society. Loch worked closely with W. Fairlie Clarke, M.A., M.B., F.R.C.S., chairman of the medical committee charged with study of "use and abuse of medical charities." Appointment of an "almoner" was suggested to sift admission of patients. In 1895, through the influence of the society, an experienced social worker from the society was placed at the Royal Free Hospital to act as admission officer and also to render social services to patients admitted for treatment. Out of this has developed the well established hospital-almoner movement.

For forty years Sir Charles Loch guided and fostered this movement and contributed to the concept of the intimate relation of medicine and social work. Early in the development of medical social work in this country close personal relations were established with Anne Cummins, Lady Almoner

at St. Thomas's Hospital in London. Interchange of visits by medical social workers between the two countries has forged bonds of fellowship and understanding.

With the turn of the century, there was sore need for improvement in the services offered by outpatient departments in our country. If we may judge from the subjects of discussion in the American Hospital Association of that time, hospital administrators were primarily concerned with important housekeeping responsibilities, such as refrigeration, laundry service, floor covering and accounting. Such dispensaries as existed — about 100 in the country in 1900 — were overcrowded and poorly organized. Influx of immigration into growing industrial centers created unwholesome congestion and pressed hard on hospitals and schools.

Dispensaries were regarded as existing for "the poor only." The larger outpatient departments served as a resource for teaching of medical students, for surgical dressings of discharged ward patients and for sifting of patients for ward admission, rather than for any consistent treatment such as we find today. "Running off a clinic" was a familiar and suitable descriptive phrase, as the hard-pressed clinician faced the 20 or 30 patients he had to treat in the course of a couple of hours.

Looking back at his early experience in the clinic at the Massachusetts General Hospital, Dr. Cabot wrote[1]: "I had been working for some years as a dispensary physician, concerning myself chiefly with perfecting the methods of diagnosis, so that the patient could obtain there a diagnosis as correct and scientifically founded as he could from a private physician. But in the course of these efforts for a complete and exact diagnosis which should do justice to the actual needs of the patient, I found myself blocked. I needed information about the patient which I could not secure from him as I saw him in the dispensary — information about his home, about his lodgings, his work, his family, his worries, his nutrition. I had no time — no dispensary physician had time — for searching out this information through visiting the patient's home. Yet there was no one else to do it. My diagnosis remained slipshod and superficial in many cases. . . .I found myself constantly baffled when it came to treatment. Treatment in half the cases I studied in those years involved an understanding of the patient's economic situation. . . but still more his mentality, his character, his previous industrial history, all that had brought him to his present condition, in which sickness, fear, worry and poverty were inextricably mingled. Much of the treatment I prescribed was obviously out of the patient's reach. I would tell a man he needed a vacation or a woman that she should send her children to the country but it was quite obvious, if I stopped to reflect a moment, that they could not possibly carry out my prescription, yet no other filled the need. To give medicine was often as irrational as it would be to give medicine to a tired horse dragging uphill a weight too great for him. What was needed was to unload the wagon or rest the horse; or, in human terms, to contrive methods for helping the individual to bear his own burdens in case they could not be lightened. Detailed individual study of the person, his history, circumstances and character were frequently essential if one was to cure him of a headache, a stomachache, a cough, or any other apparently trivial ailment."

Dr. Cabot was breathing the atmosphere of the times. Many social reformers, especially in New York and Chicago, were arousing public opinion to various evils such as bad housing, sweatshops, child labor, long hours and poor pay for industrial workers and the hazards of occupation. Need for trained personnel to tackle these problems and to render service to persons caught in situations beyond their control was emphasized especially by the hard-pressed social agencies. The first effort to prepare men and women for service to individuals and families in distress was undertaken by the New York Charity Organization Society in offering summer sessions, beginning in 1898, which in 1903 developed into the New York School of Social Work. In Boston, in 1904, Simmons College, in co-operation with Harvard College, established the Boston School of Social Work, later called the Simmons School of Social Work. Social work was emerging as a profession.

Dr. Cabot was familiar with the social agencies in Boston. After his graduation from Harvard Medical School in 1892, he became a member of the board of trustees of the Boston Children's Aid Society. Quite characteristically he gave considerable time as a volunteer that he might better understand the work of the society in its care of children deserted by their parents, orphaned, cruelly treated or described by their parents as "unmanageable." He was much interested in the life histories of these children and the methods of social case-study and treatment and the skill of those who dealt directly with the individual children. This experience suggested to him the possibility of applying the methods of social case work to his patients in the clinic.

In June, 1905, Dr. Cabot wrote to some of his friends who were interested in social services in Boston to ask advice about a possible assistant for him in the Out-Patient Department at the Massachusetts General Hospital. He found an eager pioneer in Garnet I. Pelton, who had spent several years living and working at Denison House, a social settlement in the Boston Syrian district, after her graduation from the Training School for Nurses at the Massachusetts General Hospital. On October 2, 1905, Miss Pelton was assigned a desk and chair in the corridor near the Medical Clinic, to be near at hand. I have been told that as

she sat at her desk that first morning a surgeon came from the clinic hunting for someone to take care of the baby in his arms, as he was ordering the mother into the ward for an emergency operation, and asking if the husband could be found.

Social service was introduced into dispensaries at a propitious time for demonstration of its practical usefulness, for the antituberculosis movement was just getting well started with its campaign against ignorance and low standards of living. After the announcement of Koch's momentous discovery, pioneers in the antituberculosis campaign were arousing the public to the importance of control of the disease by education of the patient and by the building of sanatoriums for their segregation. In Massachusetts, Dr. Edward O. Otis and Dr. Vincent Y. Bowditch were prominent in this field. Osler, at Johns Hopkins, was calling attention to the importance of home care for tuberculous patients attending dispensary clinics. In New York, Dr. Hermann M. Biggs was leading a public educational campaign. At the annual meeting of the New York Charity Organization Society in 1901 he presented a stirring report on "Tuberculosis and Tenement House Problems." He interested Mr. Edward T. Devine, the secretary of the society, in developing a special committee on tuberculosis, consisting of 12 doctors and 12 laymen, thus emphasizing the public responsibility for attacking this disease that was so closely related to the social condition of its victims. Out of this interest the first antituberculosis association was formed and the nationwide movement for control and prevention of tuberculosis was launched.

At about this time Dr. S. A. Knopf's prize essay on "Tuberculosis as a Disease of the Masses and How to Control It" was given wide distribution. The intimate relation between disease and social conditions was being illuminated. Patients revealed gross disease, both medical and social.

In Massachusetts, where interest in tuberculosis had long been shown by physicians, the public was drawn into co-operation in 1903, with the founding of the Boston Association for Relief and Control of Tuberculosis and the Cambridge Anti-Tuberculosis Association. At the Massachusetts General Hospital, Dr. Joseph H. Pratt had started his Emmanuel Church Tuberculosis Class in July, 1905.

Miss Pelton, at her post at the hospital, soon found that her major task was to find some way of helping the many tuberculous patients referred to her from the medical clinics. "Fresh air, good food, rest, freedom from worry" was a familiar prescription. Difficult as it was to secure these for the patients, there were also the obstacles of fear of "consumption," ignorance of the nature of the disease and skepticism of treatment that did not call for medicine or surgery. Dr. Pratt's class was limited to 20 patients who lived nearby. However, he was an inspiration to many, and his optimism was contagious. Since there was inadequate provision for sanatorium care, the formation of more tuberculosis classes seemed the obvious step. Dr. Cleaveland Floyd and Dr. John B. Hawes, 2nd, young men who had worked with Dr. Pratt, consented to take charge of "Suburban Tuberculosis Classes," with the help of the new department. Thus began the long and notable careers of these two men in the treatment of tuberculosis and in

Painting by Sargent

FIGURE 1. *Sir Charles Lock.*

the promotion of the campaign for its control and prevention. In January, 1906, Miss Pelton secured the help of Ellen T. Emerson, 2nd, to organize and guide a group of volunteers for home visiting of the patients and for education of them and their families in the necessary simple hygiene so difficult to maintain.[2]

We may recall that in Massachusetts at this time tuberculosis was not yet a reportable disease. When in 1907, against considerable medical opposition, it was made so by its being "declared" as "dangerous to the public health," a state commission on tuberculosis, under the chairmanship of Dr. Arthur T. Cabot, was charged with preparing a program of facilities for the care of tuberculous patients. Social workers were called to testify before the legislative committee concerning the home conditions under which tuberculous patients were

living. As special local clinics were established, the public-health nurse became an essential factor in the program and took over much of the home visiting for hygiene supervision and securing of examination of others in the families. There was still an important task for the medical social worker — to be at hand in the outpatient department to give help to the bewildered patient who first learned of his diagnosis and was confused about how he could carry out what seemed the impossible advice to

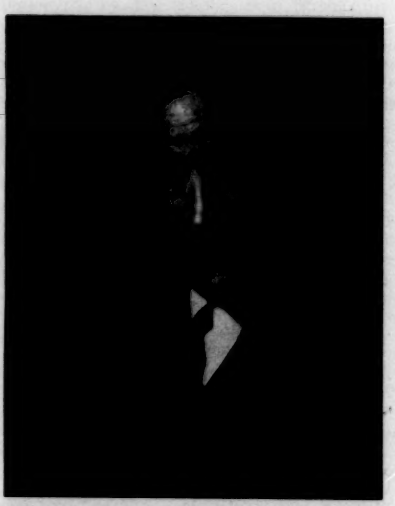

FIGURE 2. *Dr. Richard C. Cabot.*

shift responsibility and to free himself to enter a sanatorium for many months.

While the Massachusetts General Hospital was being stirred by a physician to give attention to inadequacies in treatment of clinic patients, a neighboring institution was approached from another quarter to note the social significance of some of its clinic problems. In 1904 Annette P. Rogers and Helen Cheever, of the Association for Promoting the Interests of the Blind, requested the administrators of the Massachusetts Eye and Ear Infirmary to allow Dr. Anna Richardson to study the medical records of cases of ophthalmia neonatorum. Her five-year study (1902–1907) revealed 577 infants admitted for care, of which 117 had corneal involvement on admission. This shocking revelation prompted the establishment of a social service department in 1907 at the Infirmary as a link with the Commission for the Blind. A rigorous effort was made toward enforcement of the law requiring reporting of eye infections of infants. The virtual disappearance of ophthalmia neonatorum in Massachusetts since that time is one of the most striking examples of what can be done through preventive measures.

With the enthusiastic backing of Dr. George S. Derby and Dr. Alexander Quackenboss, social service at the Infirmary was promoted and broadened. Ophthalmia neonatorum was consistently pursued, with prompt reports to the Commission for the Blind. Two other special groups, numerous at that time, patients with phlyctenular keratitis and those with interstitial keratitis, were followed in co-operation with medical clinics at the Massachusetts General Hospital and with special social workers for each group. Low standards of living, inadequate food and interrupted school attendance were common problems in these groups.[3]

Dr. Cabot's initial interest in social service for clinic patients was well supported by Dr. James J. Putnam, then in charge of the Neurological Service — there were no psychiatric clinics in general hospitals in those days. In his clinic Dr. Putnam experienced the futility of advising a distressed mother to secure admission to the Waverley School for the Feeble-Minded for her troublesome defective child when she had no idea of the necessary procedure. He found it impossible to obtain adequate family histories of patients whose behavior suggested psychosis. It was unsatisfactory, in a busy clinic, to deal with the psychoneurotic patients in whom he was especially interested, since, as he said, "these patients are often great sufferers from troubles which they cannot at once or easily reveal, and indeed do not clearly understand. Their fears, prejudices and misapprehensions take on numberless forms and are often rooted in traditions and experiences which only long and intimate contact with persons of sympathetic and thoroughly understanding minds can bring to light and counteract. Such patients need moral air and sunlight and outlets for activity and thought as much as the tubercular patients need the physical air and sunlight through which they gain new holds on life."[4]

In 1906 Dr. Putnam secured as his assistant Edith N. Burleigh, a social worker of training, experience and insight, to whom he gave the special psychiatric instruction he considered necessary. Dr. Putnam's influence on the development of the social service at the Massachusetts General Hospital was felt not only through his readiness in consultation on psychologic aspects of case work but in his generous support through the years as a member of the Social Service Supervisory Committee. Both Dr. Cabot and Dr. Putnam saw the contribution of psychiatry as permeating medicine, not as an isolated specialty.

The first Annual Report of Social Service "permitted" at the Massachusetts General Hospital, 1905–1906,[5] written by Dr. Cabot, was widely distributed. His vivid description of the variety of needs of patients, as revealed in that first year to the group of social workers he had gathered together, caught the attention of doctors and laymen in many cities. Dr. S. T. Armstrong, the able director of Bellevue Hospital in New York, on learning of Dr. Cabot's idea secured the interest of the Board of Managers of the Bellevue Training School for Nurses, many of whom had become deeply concerned about the welfare of patients in that great hospital. As a result, Mary E. Wadley was appointed in July, 1906, to develop and direct a social service bureau in Bellevue Hospital, which she did with distinction for twenty years.

Dr. John Musser became interested, and in 1908 he sent Helen Glenn to spend some weeks with the Massachusetts General Hospital Social Service as preparation for establishing such a department at the University of Pennsylvania Hospital. Among the leading physicians whom Dr. Cabot listed in 1908 as "infected with the social service idea" were Theodore C. Janeway and Linsey R. Williams of New York, M. H. Fussell of Philadelphia, Henry B. Favell of Chicago and Charles P. Emerson of Baltimore. As early as 1902, Dr. Emerson led a group of Johns Hopkins medical students to volunteer in the Baltimore Charity Organization Society to the end that "they might learn how the poor man lives, works and thinks; what his problems are; what burdens he must bear. They learn the intimate relationship between the ills of the body and home environment."[6] Dr. Emerson was partially responsible for introducing the social worker to Johns Hopkins dispensary in 1908.

When Dr. Emerson was appointed dean of the Indiana University Medical School in 1911, he arranged the appointment of Edna G. Henry to the Department of Economics and Social Science of the University and her assignment to the Medical School to direct a social service department. He was quite specific concerning what he considered the most important function of the medical social worker, namely, to help in the education of the medical students, who were assigned to visit the homes of patients and carry out social services for them under supervision. "If the Social Service helps one patient, then one patient has been helped; but if this Department teaches one medical student how best to help that patient, then it has indirectly helped many of the patients whom this student may later treat. In widely distant localities and for many years its influence will be extended by these medical students."[7]

With much the same purpose, Dr. David L. Edsall in 1913 asked the Social Service Department at the Massachusetts General Hospital for assistants to work in his clinics and to report on social aspects of the subjects under discussion. Participation of social workers in medical teaching later developed into a recognized function in teaching hospitals, as we shall see.

Dr. Janeway, after reading Dr. Cabot's first report, wrote, in an article entitled "The Social Evolution of a Dispensary": "Down in Boston people seem to be born with less of that eminently human desire to be like their neighbors than animates the rest of mankind. As for thinking along the well worn grooves — no, Boston is not the home of orthodoxy. Such a spirit of freedom from convention, in an untrained mind, brings forth a new fad; in a trained mind, a great discovery or a genuine reform. In the out-patient department of the old MGH itself, a revolution in methods of treatment is in progress, which is likely to spread widely and inaugurate an era of better things for many patient sufferers on the crowded benches of dispensary waiting rooms throughout the land."[8]

Dr. Janeway's characterization of Boston as "unorthodox," insofar as one old conservative institution was concerned, was a little too general and generous an assumption. Indeed, there was opposition and, what was worse, indifference in some quarters. Possibly urgent requests for a definite prognosis on the condition of patients referred, so that plans could be made for the patient and his family, were irritating to the scientific mind. But physicians were familiar with methods of case demonstration and, since the workers assumed that the physicians wanted their medical work to be effective, the procedure adopted was case demonstration, which in a few years was rewarded.

At the Boston Dispensary a vigorous department of social service was established, with Elizabeth V. H. Richards in charge, well supported by Michael M. Davis as director. Their several studies of clinic attendance pointed up the need for more adequate organization of clinics and programs for "follow-up."

A study under the auspices of the Russell Sage Foundation in 1911 listed 44 departments of social service in hospitals and dispensaries in 14 cities as far west as St. Louis and Chicago. The idea was spreading, as Dr. Janeway had predicted. Initiative for starting hospital social work varied. As we have seen, some leading physicians of the early days were quick to see its value. Financial support, however, usually came from sources outside the hospital. Frequently women's auxiliaries of hospitals undertook to secure funds for this new service. Such was the case when, in 1914, Gertrude L. Farmer was appointed Director of Social Service at Boston City Hospital.

As councils of social agencies were organized, social service departments were included, and in many cities total support came from community chests. This unfortunately tended to emphasize the identification of hospital social work with community social agencies, rather than with hospitals,

and to divide authority for its direction. In many cities, especially in the west, medical social workers are included as consultants on the staffs of community and hospital councils.

The practice of medicine was undergoing many changes. Successful treatment in many diseases increasingly called for intelligent co-operation from the patient. Dread diagnoses — tuberculosis, heart disease, diabetes, syphilis — could no longer be shrouded in mystery. Frankness between doctor and patient was the basis for any treatment that necessitated dietary control, persistent special exercises, limitation of activity, consistency in following treatment, examination of families in the interest of early discovery and prevention of disease. Education of the patient and family was essential.

To one familiar with the wide range of personal and social problems that can complicate human life in its ramified relationships, a hospital population represents a veritable cross-section of a community. Sickness may create a patient's personal problem or further complicate prior difficulties. Family life shattered by death or disrupted by illness of mother or of wage earner, physical handicap brought on by accident or disease that necessitates learning a new way of life, unmarried maternity and serious questions of responsibility for a baby's future, loneliness in old age when sickness forces dependence, industrial accidents and disease and chronic disease that calls for courage to discover values in living are all there to challenge the resourcefulness of medical social workers as they face with the patient the meaning of sickness in its implications for him and his family.

While the uses of social service in the medical care of patients were being recognized by clinicians, hospital administration was beginning to see its value also. "Social Service and Hospital Efficiency"[9] was the title of a paper given at the annual meeting of the American Hospital Association in 1918 by Dr. A. R. Warner, then superintendent of Lakeside Hospital in Cleveland and in that year appointed secretary of the association.

In 1919 the American Hospital Association authorized a survey of hospital social service in this country, under the supervision of a committee of hospital administrators, nurses, medical social workers and representative laymen interested in the subject, with Michael M. Davis, Jr., as chairman. Three hundred social service departments were reported, with approximately 850 workers. Clarification of function and organization was obviously needed, and on this subject the committee made recommendations. Need for more adequately prepared personnel and better facilities for the training of workers was urged, and a further study of this subject was recommended. The report of the Committee on Training, published in a special Bulletin[10] in 1923, outlined a curriculum for a two-year postgraduate course.

Meanwhile the American Association of Hospital Social Workers (later Medical Social Workers) was organized in 1918. The association had been actively identified with both the Hospital Association studies, and undertook to further its constructive recommendations through special committees of function and education. In the latter, valuable financial support was given over several years by the Russell Sage Foundation. An educational secretary, Kate McMahon, was appointed in 1925 to work with those teaching centers that, with the help of physicians, psychiatrists and leaders in public health, have developed special education for medical social workers in schools of social work.

In 1928, the American Association of Medical Social Workers formulated "Standards to be Met by Social Service Departments of Hospitals and Dispensaries" — including function, personnel and organization. This was accepted officially by the American Hospital Association and the American College of Surgeons and was included in the statement of standards used by the college. The latest revision appeared in 1949.[11]

At the first International Conference of Social Work, held in Paris in 1928, Dr. Richard Cabot presented a report[12] on the history and extension of social service in hospitals and dispensaries. Recognizing the pioneering of hospital almoners in England, he reported its extension in England, Scotland and Australia. For the United States, he stated that in 1924 there were 420 hospitals with social service departments, with 1 in Hawaii. Canada had 10.

General acceptance of the idea of social work in hospitals was indicated by the following reports, sent in response to Dr. Cabot's inquiry: Germany, 77 hospitals with social workers; France, 28 hospitals with units of service in 48 clinics, the work in France developing on the initiative of individual physicians. Hungary reported several departments, Denmark, 2. Through the interest of the Rockefeller Foundation, a department was established at Peking Union Medical School Hospital in 1921, with Ida Pruitt in charge. A department at St. Luke's International Hospital in Tokyo was started in the early 'thirties by Helen Shipps, sponsored by Dr. H. Hashimoto.

The uses of medical social work in emergencies were demonstrated at the time of the Halifax disaster, when the Red Cross relief organization assigned workers to the several clinics set up for the victims, many of whom were burned and blinded. Then, with the entrance of our country into the first world war, the American Red Cross developed an expanded and varied program for service to our fighting men in hospitals and to their families through its Home Service. Many workers in the social service departments of civilian hospitals were called to fill positions with the Red Cross. Nurses were in great demand. Social workers, both

medical and psychiatric, were for the first time assigned to Army and Navy hospitals. After the war the Veterans Administration established social service departments in their hospitals. These services were continued through the 'twenties and 'thirties. Again, in the mobilization of medical units in 1941, social service under the Red Cross was included in hospital groups sent overseas. With the withdrawal of the Red Cross from these supplementary social services to the military hospitals, negotiations are in process with the Surgeon General of the Army to establish medical social services on an official basis in the Army hospitals. Psychiatric social workers are already established in the Neuropsychiatric Consultant Division.

The years of depression in the 'thirties brought sharply to the fore the influence of prevalent fears, anxiety and feelings of insecurity among people in all economic groups. The effects of emotion on bodily function were, of course, well known to the medical profession. But the increase of symptoms of psychogenic origin brought a new focus of attention on psychologic factors in disease. The term "psychosomatic medicine" became popular. May we not look at that period as the occasion for the return of psychiatry, that rejected child of medicine, which had gone into a period of isolation during its disturbed adolescence? At any rate, there has been a marked increase in appreciation of the contribution of psychiatry to general medicine. The importance of the attitudes of patients toward their personal problems and their capacity for handling their difficulties calls for discriminating assistance from social workers as they share with physicians in the study and treatment of patients and in research.

Social and personal problems arising out of sickness have never been characteristic of the so-called "poor" only. The familiar range of social problems found in general hospital wards is to be found in some degree among private patients also. Poverty is relative. Financial pressures can bring deep emotional distress, with its physical results, among all economic groups. A full range of social complications may attend sickness wherever it strikes. So we find that the services of medical social workers have for some years been available for private patients in many hospitals. For instance, when the Baker Memorial Unit, "for people of moderate means," was proposed at the Massachusetts General Hospital, the doctors' committee requested the assignment of a medical social worker to the staff. Not only from that unit but also from Phillips House do physicians seek direct service and consultation for their patients.

The teaching function of social service departments began with the supervision of students in association with the schools of social work that were offering the special two-year postgraduate training for the field of medical social work. Such courses are now offered in 21 universities and colleges. Social service departments have for many years participated in nursing education through lectures and case demonstrations concerning the social aspects of sickness. Since the inception of the early programs for participation in the teaching of medical students, as requested by Dr. Emerson and Dr. Edsall, individual physicians in several places have asked medical social workers to share in the teaching of social aspects of medical care. It is of interest that with the opening of Beth Israel Hospital in Boston, the clinical staff insisted not only on the establishment of a social service department but on the co-operation of the department in the medical teaching program. A study of the extent and the methods used in teaching the social and environmental factors in medicine was made in recent years by a joint committee of the Association of American Medical Colleges and the American Association of Medical Social Workers.[13] Fifteen social service departments were found to have shared in this teaching.

When the Federal Social Security Act was passed in 1935, an impetus was given to the extension of the use of medical social workers in state and local departments of public health and public welfare. Several states had already established cancer and "venereal disease" clinics and employed medical social workers. At the Federal level medical social consultants, under the direction of Edith Baker, chief of Medical Social Service of the Children's Bureau, fostered the development of social services in connection with state crippled-children programs and divisions of maternal and child health. Within a few years after the passage of the act nearly all the states developed such services. With the expansion of the National Program for rehabilitation for civilians to include physical restoration, state rehabilitation programs provided for medical social workers as consultants.

Medical social work in this country has from the first responded to the desire of the medical profession to share responsibility with the profession of social work. Out of long experience in social services in clinical medicine, the opportunities broadened into public health and preventive medicine. Sickness and health can never be separate from the individual and the community in which he lives. Medicine and public health of the future must be based on a broad concept of interprofessional relationships. The medical profession in all its richly contributing branches, hospital administrators who see their institutions as broadly social in purpose, nurses in their clinical and public-health functions, medical social workers, dietitians, occupational and physical therapists — all who have been rallied to serve the sick and foster health — must learn to work together under the leadership of medicine.

A significant instance of such interprofessional functioning is that of the Harvard School of Public Health, where social work and nursing are given official rank. Elizabeth P. Rice, as assistant professor of medical social work, has a group of 5 medical social workers of experience who are applying their knowledge and skills as they work in close co-operation with clinical medicine, psychiatry and public health in the study of the social aspects of child growth and development and in research into the social and emotional factors in some major diseases of concern to public-health workers.

We see here an appreciation of the expanding scope of medicine as it leads to a deeper understanding of health as defined by the World Health Organization — "a state of physical, mental and social well-being."

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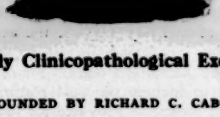
CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL



Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

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CASE 37191

Presentation of Case

A thirty-eight-year-old man was admitted complaining of epigastric pain of thirty hours' duration.

He was first seen in this hospital thirteen years before entry because of a mass in the left axilla. This was removed, and pathological examination showed chronic lymphadenitis. Physical examination at that time showed in addition mild congenital nystagmus and a split cardiac first sound heard all over the precordium and over the aorta. The blood pressure was 132 systolic, 82 diastolic.

He was next seen in the Out Patient Department ten weeks before admission, complaining of dizzy spells. Hypertension had been noted on examination by his physician three years before. He stated that he was nervous and jittery and unable to relax and that while at work he had constant epigastric pain that was only slightly relieved by taking food. He complained about the nystagmus, which he said made it difficult for him to read and work; he felt that this was the basis of all his trouble. For approximately one and a half years prior to entry he had dizzy spells associated with blurring vision and at times with nausea. These had been relieved by "little white pills." Physical examination showed nystagmus, Grade 0-I hypertensive changes in the retinal vessels, an accentuated and reduplicated first sound at the apex and aortic region and a blood pressure of 210 to 170 systolic, 140 to 120 diastolic. An electrocardiogram was within normal limits. An x-ray film of the chest showed a prominent left ventricle and a tortuous aorta with some calcification within its arch. Urinalysis showed a specific gravity of 1.020, with no abnormal findings. He improved subjectively with sedatives and two weeks' vacation. At his last visit to the Out Patient Department three weeks before this admission the blood pressure was 204 to 180 systolic, 140 diastolic.

On the afternoon prior to admission he was suddenly seized by a sharp, knife-like pain in the epigastrium, midway between the xiphoid and the umbilicus. This was associated with aching in both arms down to the elbows. There was no radiation or penetration to the back. The pain continued to be sharp and severe all during the afternoon. After arriving home he felt nauseated and shortly afterwards collapsed on the floor and was unconscious for a short time. He was rushed to another hospital,

where he was found to be pulseless, with an unobtainable blood pressure. Treatment consisted of two units of plasma, oxygen and stimulants. Administration of the second bottle of plasma had to be stopped because he had a shaking chill. On regaining consciousness he stated that the pain was still present but much less severe. The following morning the blood pressure was 90 systolic. There was epigastric tenderness and marked cyanosis, even though he was in an oxygen tent. During the day he vomited everything he ate. Late in the afternoon he was transferred to this hospital. On arrival he stated that the epigastric pain was only mild and was more a tenderness than actual pain. He felt tired and worn out. Shortly after admission he passed a normal guaiac-negative stool and 150 cc. of cloudy urine.

The patient's father died at the age of forty-five of a "heart attack." His mother had died of tuberculosis at twenty-five. Four siblings were alive and well.

Physical examination revealed an acutely ill man with mottled cyanosis of the upper chest who felt more comfortable at a 30-degree elevation than when lying flat. The neck veins were distended but not pulsating. The right diaphragm was high, with diminished motion. There were diminished breath sounds and dullness to percussion at the base of the right lung. The heart was not enlarged to percussion. The rate was 130, the rhythm regular. There was a split mitral first sound. No murmurs were heard. The abdomen was distended and tympanitic, with brief spasmodic peristaltic waves. There was no demonstrable abdominal fluid. There was dullness throughout the right upper quadrant and a discretely localized area of tenderness with some spasm in the epigastrium. The pulses in the extremities were strong and equal.

The temperature was 101°F., the pulse 140 and the respirations 35. The blood pressure was 150 systolic, 100 diastolic in the arms, and 155 systolic in the legs.

Urinalysis showed a specific gravity of 1.024, a ++ test for albumin, and 1 to 2 casts and an occasional white blood cell per high-power field in the sediment. Examination of the blood disclosed 15 gm. of hemoglobin and a white-cell count of 18,000, with 89 per cent neutrophils. The nonprotein nitrogen was 38 mg. per 100 cc., the prothrombin time 24 seconds (normal, 19 seconds) and the serum amylase 80 units per 100 cc. An electrocardiogram showed an abnormal record, with nonspecific T-wave changes and sinus tachycardia. An x-ray film of the chest showed a high right diaphragm with platelike atelectasis above it. The heart was slightly enlarged, the superior mediastinum widened with an elongated and tortuous aorta. An x-ray film of the abdomen suggested a large liver filling the right upper quadrant. Venous pressure in the left antecubital vein with the patient recumbent was equal to 230 mm. of saline.

On the day following admission the patient was more comfortable. The heart rate was 132, with a regular rhythm. A rough systolic murmur was now heard all over the precordium, with its maximum intensity in the second right intercostal space. It was transmitted up both carotids. There was also a strong basal systolic thrill. There was no change in the abdominal examination. The temperature was 102°F. The blood pressure was 140 systolic, 90 diastolic. The venous pressure determinations were unchanged. An electrocardiogram again showed an abnormal record with sinus tachycardia of 115. As compared to the previous record, the ST segments in Leads 1, 2, V_5 and V_6 were slightly more depressed.

On the third hospital day a blowing Grade I aortic diastolic murmur was heard in addition to that noted the day before. The temperature was 101.8°F., the pulse 110. The blood pressure was 110 systolic, 90 diastolic.

On the midafternoon of the fourth hospital day the patient felt the gradual onset of severe pain in the midepigastrium, radiating into both shoulders. On examination marked generalized abdominal spasm and tenderness was noted, most severe in the upper abdomen. Peristalsis was hyperactive. The lungs were clear. Examination of the heart was unchanged. The pulses were present in the extremities. The temperature was 101°F., the pulse 130. The blood pressure was 104 systolic, 80 diastolic. The serum amylase was 61 units per 100 cc. He seemed to recover somewhat from this episode but died quietly on the following day.

Differential Diagnosis

Dr. Paul D. White*: May I see the x-ray films? Once in a while the x-ray films reveal the first evidence of the effect of hypertension on the heart.

Dr. Stanley M. Wyman: The x-ray films taken ten days before admission show a heart definitely abnormal for a man of thirty-eight years. The left ventricle is prominent, and the aorta is quite tortuous. There is some calcification in the arch of the aorta.

Dr. White: Is the mediastinum widened?

Dr. Wyman: No; that looks all right. The heart seems changed in shape but not enlarged.

Dr. White: In the films taken at the time of admission, the diaphragm seems to have risen on both sides, especially on the right.

Dr. Wyman: These films were taken with the patient lying on his back; in that position the right leaf of the diaphragm usually rises more than the left. I am not sure that the liver is enlarged. There is one interesting observation: On the later films I cannot trace the descending thoracic aorta, but there seems to be a fullness at the point where it formerly curved in toward the spine.

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DR. WHITE: The increased mediastinal shadows may be due to a high diaphragm and the position of the patient when the film was taken, but the increase looks greater than what can be explained by position alone.

DR. WYMAN: The patient had distended neck veins. I think the superior vena cava may be behind that shadow. The diaphragm is elevated, and therefore the aorta is compressed somewhat and made more tortuous. I believe the lung picture is due to atelectasis.

DR. WHITE: May I see the electrocardiograms? Leads 2 and 3 are not remarkable. The rhythm is regular at a somewhat elevated rate and the T waves are satisfactory. The unipolar limb leads I shall pass as normal. The precordial leads show a small R-wave that may be considered within the normal range. There is nothing striking in the electrocardiogram taken five weeks before the patient entered the Emergency Ward. In the electrocardiogram taken when he entered the Emergency Ward there is a distinct change; the rate is faster, the T waves are lower in the three limb leads and the QRS waves are smaller. In the precordial leads — V_5 and V_6, over the left ventricle — there is lowering of the T waves, but there is no striking change in the ST segments. There is no clear evidence of an acute myocardial infarction — merely a nondiagnostic abnormality. On the following day the T waves are diphasic in Leads 4, 5 and 6, but they do not seem to be seriously involved. There is no arrhythmia or sinus tachycardia. The electrocardiograms taken on the day before the patient died seem to be actually better, although there is a very slight elevation of the ST segments in Leads 1 and 6. The QRS waves are normal.

The findings that I have to fit together are quite varied. This thirty-eight-year-old man had a high diastolic blood pressure and constant epigastric pain. Just before death he had fever and sharp epigastric pain that did not radiate to the back or thorax, and he finally had vascular shock. In addition, there was atelectasis at the right lung base, with elevation of the right diaphragm, a superior-mediastinal syndrome, slight enlargement of the left ventricle of the heart, a nondiagnostic electrocardiogram, an aortic systolic murmur and thrill, an aortic diastolic murmur that developed after the onset of the disease, a high white-cell count, an elevated serum amylase, relatively normal gastric and renal function and an illness of five days' duration. I submit that it is rather difficult to explain all these items by one diagnosis.

First I shall mention four surgical emergencies. The first is a peptic ulcer with perforation, abscess formation, mediastinitis and peritonitis. I do not think that fits, because there was hyperactive peristalsis and the stools contained no blood. The second is gall-bladder disease with perforation and somewhat similar complications. The third, mesenteric thrombosis or embolism, does not fit this picture at all. The fourth, an abscess of the subperitoneum — perhaps a cold abscess, since he may have had tuberculosis — with sudden extension to the diaphragm and thorax, seems also rather farfetched to me.

Acute myocardial infarction with rupture and tamponade is a possibility. He did have epigastric pain. However, he had a nondiagnostic electrocardiogram, complications in the mediastinum and unusual new murmurs, so I do not believe that an acute myocardial infarct can explain the sequence of events. There was no evidence of an acute primary pulmonary process such as embolism, neoplasm or tuberculosis. Bacterial endocarditis may produce a murmur if it has been present long enough, but I cannot believe that in a few days ar acute bacterial endocarditis could have produced the murmurs that this patient had. The new sounds were described as murmurs, not as friction rubs, and there was a thrill, which I think makes the murmur more important. Bacterial endocarditis has produced such murmurs in an interval of two or three weeks or in a few more days than this patient was ill, but not so rapidly as this.

What I think this patient had is acute pancreatic disease, probably not of the septic type at first, but rather the result of a vascular accident — perhaps pancreatic apoplexy. An aneurysmal dilatation of the vessels, with dissection extending into the wall of the thoracic aorta and with rupture producing a subdiaphragmatic hemorrhage or abscess, can explain the miscellaneous findings in the abdomen and thorax better than anything else. If the wall of the aorta dissected upward from an original small tear high in the abdominal aorta, it could have produced pressure on the mediastinum, the change in the aortic shadow seen in the x-ray films and the aortic murmurs. I shall make a diagnosis of pancreatic vascular accident, with later more extensive dissection of the aorta itself to involve the mediastinum and the aortic valve.

Ten weeks before death he began to complain about nystagmus. Was the old congenital nystagmus aggravated by the present illness; was the nystagmus associated with paresis or with hypertensive encephalopathy; or was it due to a pheochromocytoma? I do not know. The minimal hypertensive changes in the retinal vessels are against a hypertensive encephalopathy.

DR. CHESTER JONES: The house staff did a nice job on the diagnosis in this case. When the members of the medical and surgical house staff saw this patient in the Emergency Ward, they were bothered by the difficulty of deciding between an abdominal and a cardiovascular emergency with symptoms referred to the abdomen. There is no doubt that epigastric pain of a minor or major degree referred to both arms may occur in either condition. At no time did the patient have any substernal pain.

Dr. Hugh Chaplin's note is of interest; he wrote: "We shall admit him on the danger list to the East Medical Service with the presumptive diagnosis of myocardial infarction. However, since it is still possible that an acute abdominal condition coexists, we shall have him carefully checked by the Surgical Service for pancreatitis or perforated ulcer." The abdomen, however, showed no local rigidity or spasm, and peristalsis was always audible. When I saw the patient on the following day I could not make a diagnosis, but I did not believe he had perforated ulcer or an acute hemorrhagic pancreatitis. I thought he had an acute vascular accident, possibly in the region of the celiac axis, or perhaps a myocardial infarction. At that time, in addition to the collapsed right lower lobe and the extremely tender epigastrium, the liver was considered to be enlarged, in which case it had to be on the basis of cardiac failure. Moreover, at that time I heard a very loud systolic murmur in the second right intercostal space and felt a thrill very easily; neither of these had been present three hours before. We all felt that conservative measures were indicated, as he was in no condition to undergo any surgical procedure. The amylase of 80 mg. was much lower than one would expect with a hemorrhagic pancreatitis that caused as many symptoms as this man had. At no time did he have the abdomen of acute hemorrhagic pancreatitis.

The patient was a perfect candidate for a vascular accident. At thirty-eight he had hypertension and was known to have had hypertension for some time. His father died of angina at the age of forty-five years and undoubtedly had coronary disease of some years' standing.

Dr. White: Do you think the elevated amylase represented some pancreatitis without a necessarily full-blown lesion?

Dr. Jones: I do not know. We all believed he had a large liver, probably due to a disturbed circulation. Whether the amylase is elevated with marked passive congestion or not I do not know. I do not know of any other cause, unless there was dissection of one of the branches of the aorta going to the pancreas.

Dr. Alfred Kranes: Did Dr. White consider a myocardial infarct with rupture of a chorda tendineae as a cause of the murmur?

Dr. White: I do not believe that that was present, in view of the murmur and thrill in the aortic area and the absence of positive characteristic signs in the electrocardiogram.

Dr. Benjamin Castleman: How do you account for the change in the murmur in the light of your diagnosis?

Dr. White: I think the dissection involved the base of the aortic valve.

Clinical Diagnoses

Dissecting aortic aneurysm.
Hypertensive cardiovascular disease.

Dr. White's Diagnosis

Pancreatic vascular accident, with aortic dissection extending to the thoracic aorta and involving the aortic valve.

Anatomical Diagnoses

Dissecting aneurysm, aorta, ascending portion, with rupture into pericardial sac.
Hemopericardium (cardiac tamponade).
Bicuspid aortic valve, with stenosis, slight.
Myocardial infarction, acute, left ventricle.

Pathological Discussion

Dr. Castleman: The abdomen, including the pancreas, was perfectly normal. In this photograph of the entire aortic valve (Fig. 1), one first notices

Figure 1. *Bicuspid Aortic Valve with Two Intimal Tears.*

that it is bicuspid and then that both coronary arteries come off the anterior cusp. Just above the commissure is an intimal tear, which we believe accounts for the initial attack of pain, as this tear leads through the media and causes a pouch to be formed in the pericardial sac. The other tear (on the left) is much more recent and does not go out beyond the media into the adventitia. The next slide of the pericardial cavity (Fig. 2) shows the tear through the adventitia of the aorta with the hematoma that possibly occurred on the day of admission to the hospital; the ultimate attack five days later was due to a perforation through this into the pericardial cavity, in which 600 cc. of blood with a cardiac tamponade was found.

There was an area of early infarction in the anterior wall of the ventricle. We believe that the hematoma in the region of the ascending aorta,

being there for five days, compressed the pulmonary artery and right auricle enough that it might have had something to do with the slight right heart failure that he developed. We did not find any dissection of the coronary artery. Perhaps the terminal infarction might also have been due to pressure from the hematoma around one of the coronary arteries.

DR. JONES: How far did the dissection extend?

DR. CASTLEMAN: There was no actual dissection beyond the point of the intimal tear. It is an example of the rare and usually fulminating type of dissecting aneurysm in which the tear extends through the media before there is a chance for dissection. All dissections occur within the media.

FIGURE 2. *Aortic Valve.*
Arrow points to adventitial tear of aorta. Note hematoma to right of arrow.

DR. WHITE: The fluid in the split aortic wall increased to produce the murmur later.

DR. CASTLEMAN: The pressure inside the sac was built up until it was so great that it finally ruptured. There was no dissection at all — only a ruptured aorta, which has been described occasionally in association with a bicuspid valve.[1] Apparently the bicuspid valve is not able to bear the load. In all the cases in which rupture is associated with a bicuspid valve it is seen in the posterior wall of the aorta, which apparently bears the brunt of the strain.

DR. CONGER WILLIAMS: The first tear may have occurred shortly before admission. He had a history of discomfort on effort for three or four days before he entered. It may have started then.

ADDENDUM

DR. WHITE: In later discussion it was agreed that an elevated amylase of this extent cannot be considered a specific indication of pancreatic disease, since, although unexplained, it can be found in a variety of conditions, including aortic dissection. The unusual low epigastric site of pain and tenderness in this case remains a bizarre finding, although at no time during his brief stay in the hospital was there clinical proof of an abdominal surgical emergency.

DR. CASTLEMAN: A report has recently been published from the Mayo Clinic[2] indicating that morphine may often elevate the serum amylase. Perhaps this was given in this case, as well as in some of the other cases of aortic dissection with elevated serum amylase. Almost certainly the severity of the pain in this patient led to the administration of morphine.

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CASE 37192

PRESENTATION OF CASE

A sixty-eight-year-old Negro woman entered the hospital complaining of vaginal bleeding and a lower-abdominal mass.

Ten days to two weeks prior to admission the patient noted a fullness in both lower quadrants that increased so greatly overnight that she was unable to put on her girdle. This was associated only with a sensation of heaviness and with some increase in her usual chronic constipation. Five days before admission she began to have daytime urinary frequency, without nocturia, dysuria or hematuria. Three days later she noted a dull, deep pain in the sacral area, followed by the sudden gush of vaginal bleeding associated with some relief of the abdominal pain and distention. Vaginal spotting persisted, and a few hours prior to admission she had another brief episode of profuse bleeding associated with a sharp right-lower-quadrant pain. The patient denied taking any medications other than those prescribed by her physician, who stated that no hormone therapy had been given. There had been no recent darkening of the nipples.

The menarche occurred at fourteen years of age, with normal seven-day periods every twenty-eight days. The menopause was variously recorded as occurring at age fifty-three and at age thirty-eight, accompanied by mild hot flashes and sensations of numbness in the arms and legs, with intermittent spotting for two years prior to this and with no bleeding or discharge until the present illness. She had had seven normal full-term pregnancies and two spontaneous abortions.

The family history was noncontributory except that her "mother also had early menopause."

Physical examination showed a well developed and well nourished woman with patchy vitiligo. The heart and lungs were normal. The breasts were small. There was a tense, protuberant, nontender, movable mass the "size of a small watermelon" in the lower midabdomen. At pelvic examination blood was issuing from the cervical os, and the large abdominal mass was thought to be connected with the cervix. The adnexa were not felt. The vaginal mucosa was not described.

The temperature, pulse and respirations were normal. The blood pressure was 130 systolic, 90 diastolic.

Examination of the blood revealed a hemoglobin of 13 gm. and a white-cell count of 7000. Three

FIGURE 1.

urinalyses were negative. The total protein was 6.1 gm. and the nonprotein nitrogen 21 mg. per 100 cc.; the chloride was 101 milliequiv. per liter. The prothrombin time was 21 seconds (normal, 19 seconds). A blood Hinton test was negative.

An x-ray film of the chest was negative. A plain film of the abdomen showed an ovoid mass about 26 cm. in diameter arising from the pelvis and extending upward to the level of the third lumbar vertebra (Fig. 1). A few flecks of calcification were seen within the pelvis. Cytologic examination of a vaginal smear showed heavy cornification and trichomonas. Endometrial biopsy showed proliferative endometrium. Determination of urinary FSH (follicle-stimulating hormone) was positive for 96 mouse units in twenty-four hours and negative for 192 mouse units and all higher values.

In the hospital, intermittent vaginal spotting and slight lower-abdominal pain continued, but the patient was otherwise well. On the twelfth hospital day an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. SOMERS H. STURGIS*: Vaginal bleeding in a sixty-eight-year-old woman must be considered to be caused by a malignant process until proved otherwise. An abdominal mass in a Negro woman makes one think of fibroids, but fibroids do not ordinarily cause bleeding after the menopause; therefore, if fibroids were present, they were probably coincident with, and not the cause of, the bleeding.

What could have been the cause of the overnight increase in girth? Perhaps the commonest cause of such a change is bleeding into a hollow organ. From the information that the patient had urinary frequency but no nocturia I can deduce that the organ was one that had distended sufficiently to press on the bladder from behind when she was standing and walking around during the day but did not press on the bladder at night. The hollow organ in back of the bladder was undoubtedly the uterus — and therefore vaginal bleeding resulted in some relief.

Nowadays, whenever a patient has postmenopausal bleeding one must carefully eliminate the use of estrogens in some form. I have the impression that many physicians reach first for the stilbestrol bottle whenever they see a woman of sixty-eight years, and the patient frequently does not know what she is taking. That impression was heightened by seeing a four-year-old child on the Pediatric Service here who came in with gynecomastia and some darkening of the nipples but no bleeding. After exhaustive studies it was finally discovered that the child's mother had been given pills of some sort by a local physician and the child had climbed up on the washstand and taken from the shelf some of the tablets, which proved to be stilbestrol. Stilbestrol can produce pigmentation on the areola. However, this patient had no darkening of the nipples, and we have the physician's statement that estrogens had not been given, so I can eliminate any exogenous estrogen as the cause of the bleeding.

The laboratory data do not contribute much, except for what they help to eliminate. The FSH is definitely lower than one would expect in a postmenopausal patient. Usually, after the menopause, the FSH level goes up to 192 units or more per 24 hours and remains at that level throughout life, so far as I know. I think the highest level found in Dr. Fuller Albright's laboratory in a postmenopausal patient was 800 units in 24 hours. When a

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urine specimen is sent to the laboratory for an FSH evaluation the test is made by weighing the uteri of mice. If a pregnancy urine were sent up for an FSH level, the technician might not look at the ovaries to report a positive Aschheim–Zondek test — the formation of blood points and corpora lutea in the ovary — but would only look at the uterus, which by increased weight secondarily reflects the positive Aschheim–Zondek. Therefore the FSH test in this case would not be inconsistent with a diagnosis of pregnancy.

With the usual cause of sudden increase in the size of a mass (except for bleeding into a hollow organ), such as a twist of a pedicled structure with necrosis, or degeneration and bleeding inside of a tumor, one would expect systemic signs — not only tenderness over the mass but also an increased white-cell count, which was not present, and an elevated temperature. The negativity of the physical examination and laboratory tests helps me to rule out a twist, a degeneration or another such necrotizing cause.

The x-ray findings tend to rule out Meigs' syndrome—a fibroma in the ovary, with fluid in the chest. Apparently no metastases were visualized in the chest. May we see the x-ray films?

Dr. James J. McCort: As the protocol stated, Dr. Sturgis, the chest is entirely normal. There is no fluid in either costophrenic angle and no evidence of pulmonary or osseous metastases. The slightly tortuous aorta is consistent with the patient's stated age. The films of the abdomen show a large, homogeneous soft-tissue density arising out of the pelvis and extending into the upper abdomen (Fig. 1). The border of the soft-tissue mass is quite smooth. There is no evidence of intrinsic calcification. Three or four small round calcific densities are present within the bony pelvis and have the appearance of phleboliths. In none of the visualized bones is there evidence of metastases.

Dr. Sturgis: Do you see any fetal parts?

Dr. McCort: None whatsoever.

Dr. Sturgis: The commonest mass in the abdomen in a woman, of course, is from pregnancy. I submit that a woman who claims to be sixty-eight years old but cannot place the time of the menopause within 15 years may not be accurate in other statements. Pregnancy is out of the question in a sixty-eight-year-old woman, but if the patient were as inaccurate about her age as she was about the menopause and were really fifty-three, it is possible. She was quite fertile — seven births out of nine pregnancies is close to par for the course. About 10 per cent of pregnancies turn out to be abortions. The x-ray findings do not necessarily rule it out because, although it is quite easy to ask the patient on the table to take a deep breath and hold it, it is very difficult to be sure that the fetus is co-operating. One plain film is not sufficient to eliminate fetal bones. We had a forty-five-year-old woman at the Peter Bent Brigham Hospital with a mass of this size on whom the plain film was negative and the rapid pregnancy test positive. Another film taken three days later was positive. Apparently, at the time the first film was taken, the fetus squirmed and kicked, and its skeleton was blurred. However, I think I shall disregard the possibility of pregnancy, which would involve too many unlikely coincidences.

There was a large, nontender, apparently midline, smooth mass that was thought to be connected with the cervix. Since the cervix was not mentioned further, I can assume that gross cervical disease was not associated with the bleeding. On cytologic examination cornification was found in the vaginal smear, which is somewhat suggestive of abnormal estrogenic production in a sixty-eight-year-old woman. Another cause of cornification, however, is trichomonal infection, possibly caused by the secondary invaders. Therefore I cannot draw any specific conclusions from that information.

That proliferative endometrium was found on biopsy is a positive statement, but it leaves out a great deal. It is common, in doing an endometrial biopsy, to use a uterine probe to dilate the canal and to demonstrate the size of the uterine channel. However, I am not told the length of the uterine channel, nor do I know whether on removing the probe there was a sudden gush of blood that would show distention in back of the cervix. Proliferative endometrium does not indicate too much to me. I do know that it was not hyperplastic, but the fragments, which are usually tiny, did not show cancer. What the surgeon wanted to know was whether there was an adenocarcinoma of the fundus of the uterus. It is conceivable that after the menopause the stenosis of the cervix that generally occurs may have caused backing up of bleeding from an adenocarcinoma of the fundus, distended the uterus and produced a hematometra — a not at all infrequent sequence of events. It is possible to miss an

adenocarcinoma when taking a biopsy — or even on curettage. Even a small adenocarcinoma may cause enough bleeding to distend the uterus, although the sudden distention noted in this patient would indicate massive bleeding. In such cases, however, one would expect a gush of a large amount of blood at the time of biopsy when the stenosis was relieved. Also the operator would find a 7-inch or larger channel if the uterus were blown up with blood.

In conclusion, I should think of three possible organs: the uterus, the tube and the ovary. I shall eliminate the tube immediately because I have never seen anything like this arising from the tube. I shall have to assume that neoplasia of some sort was present, and I shall consider three possible mechanisms: distention of a hollow organ with blood, infarction, which I have eliminated, and bleeding into a tumor. I come to bleeding into the uterus or into the ovary, and I shall have to decide which it was. If it was an adenocarcinoma of the uterus, it would have been easy to tell when the biopsy was done that there was uterine enlargement and distention. Since it was not indicated here, I think I can assume that was not the case.

If I take the biopsy statement — merely proliferative endometrium — for what it is worth, it leads me to the ovary as the cause of the large mass. I shall postulate that the diagnosis was a semisolid, semicystic right-ovarian tumor — "right" because the pain was on the right side — of a slowly growing type, probably of theca-cell derivation rather than adenocarcinoma. The tumor probably produced estrogen, which resulted in cornification and the lowered FSH. Imaginatively, perhaps, I can consider that bleeding into the cystic ovarian tumor suddenly increased its size and that atrophy of the estrogen-producing elements due to pressure dropped the estrogen titer sufficiently that just about nine or ten days after the increase in size bleeding from the endometrium occurred as a result of the estrogen withdrawal. That is hypothetical, but it could explain the sequence of events. That is my diagnosis.

There is one other possibility: Smith,[1] in reporting adenocarcinomas of the uterus, noted that 87 per cent of about 180 cases had theca-cell hyperplasia of the ovary — a stromal hyperplasia. He postulates that the thecal hypertrophy is estrogenic and perhaps etiologic in the development of the adenocarcinoma. I should not be too surprised if this case showed no true tumor of the ovary but only theca-cell hyperplasia of the solid ovarian substance, with or without early adenocarcinoma of the uterus.

DR. JACOB LERMAN: I should like to ask: If Dr. Sturgis assumes there was uterine bleeding, would he not expect that the FSH would have been 3 or 6 units?

DR. STURGIS: I would assume that there was only a mild amount of estrogen stimulation, not enough to lower the FSH that far, and not enough to build up a hyperplasia that would bleed spontaneously. That is why I did not make a diagnosis of a granulosa-cell tumor.

CLINICAL DIAGNOSIS

Granulosa-cell tumor of ovary.

DR. STURGIS' DIAGNOSIS

Theca-cell tumor of ovary.

ANATOMICAL DIAGNOSIS

Mixed pseudomucinous cystadenoma and Brenner tumor, left ovary.

PATHOLOGICAL DISCUSSION

DR. GLENN E. BEHRINGER: Dr. Sturgis' diagnosis was correct, except that it was the left ovary and not the right ovary. At operation the patient was found to have a large multiloculated tumor of the left ovary, which had extended down into the broad ligament and had become attached to the uterus in the region of the cervix and led us to believe that it was the uterus. At operation we thought it was a multiloculated pseudomucinous cystadenoma.

DR. STURGIS: On the basis of the biopsy was there any doubt about the extent of the uterine cavity?

DR. FRANCIS INGERSOLL: No uterine enlargement was noted. What made us suspect that it was a functional tumor was the presence of the high estrogen effect in the vaginal smear. The reason we waited twelve days was that we were collecting urine specimens for analysis to see if we could determine whether she had a functional ovarian tumor.

DR. TRACY B. MALLORY: When this tumor was examined in the laboratory it proved, as suspected at operation, to be a multiloculated cyst of the pseudomucinous variety. However, in addition to its cystic element, it showed a small, yellowish solid area just beneath the capsule. This was composed of fibrous tissue containing multiple collections of

epithelial cells of the so-called transitional variety. This type of ovarian tumor has been known for many years as a Brenner tumor.

Neither a pseudomucinous cystadenoma nor a Brenner tumor is supposed to have any physiologic effect on the endometrium. However, examination of the uterus confirmed the findings of the preoperative biopsy showing an actively proliferative endometrium, which may be regarded as hyperplastic in a 68-year-old woman. At this point we wondered whether some of the newer technics of histochemistry could help to explain this, and for that reason a portion of the tumor was delivered to Dr. Deane of the Department of Anatomy at Harvard Medical School. She has been kind enough to come down this morning and will tell us her findings.

DR. HELEN DEANE: I shall be glad to, as far as I can. I saw only the cystic portion of the tumor. The part that I received had been fixed in a 10-per-cent solution of formalin. Frozen sections were cut and then studied by a variety of methods that we use to try to classify fatty substances. We know that these methods are far from definitive, but they are the best we have. Immediately beneath the columnar epithelium of the cysts there were occasional clusters of cells that contained small lipid droplets staining with a Sudan dye. These droplets were also positive for carbonyl groups by a test developed by Seligman and Ashbel[2] at the Beth Israel Hospital. On the other hand, the droplets did not contain any cholesterol, as demonstrated by the Schultz histochemical method, nor were they fluorescent, as is characteristic of unsaturated steroid substances. Since this was the only cystic tumor I have ever studied, I cannot say whether or not such droplets occur regularly. However, the possibility remains that the fatty cells may have been the source of estrogen. The location of the cells suggests that they are theca interna cells, and theca cells are believed to be the source of estrogen in the normal ovary.

DR. MALLORY: It is not rare to find a hyperplastic endometrium in association with a cyst of the ovary, — whether of pseudomucinous or serous type — according to Smith.[3] The problem of trying to investigate thoroughly such a case and of determining where the estrogen is being produced is a rather large one. To sample adequately a cyst of this size would take approximately 1000 blocks of 1 cm. in diameter. Dr. Deane was given only a single not very large block, so she did not have a very adequate opportunity.

DR. LERMAN: Could you not assay the fluid for estrogens?

DR. MALLORY: That has been done many times, and small amounts have been recovered.[4] The levels, however, have not been high enough to prove clearly that the estrogen was being produced locally but have been approximately of the same order of magnitude as serum and urine levels, so the estrogen could merely have been filtering into the cyst from the circulating blood.

DR. INGERSOLL: We thought that in a tumor of this size there might possibly be enough supporting structure, which must arise from the stroma of the ovary, to contain a considerable number of theca-cell elements. Possibly a great number of theca cells, each producing a very small amount of estrogen, might produce sufficient estrogen to cause a situation like this.

This case was studied so extensively because we were looking for the elusive granulosa-cell tumor. We collected urine from this patient in the hope that it might have been a granulosa-cell tumor.

DR. MALLORY: We saw a solid ovarian tumor a few years ago that appeared to be a simple fibroma, not a thecoma. The first set of a dozen sections that was put through showed nothing of particular interest. By accident the original set of sections was temporarily lost, so a new series of blocks were cut and more sections prepared. In this second set we found, by pure chance, a small area, not over a centimeter in diameter, of typical granulosa-cell tumor. That is always a possibility in these cases. Much as one would like to do a thorough examination of all these cases, it is utterly impractical in a laboratory that receives 20 to 50 surgical specimens every day and in which an attempt must be made to keep the cost of examining these specimens within the limits of a reasonable cost to the patient. An exhaustive examination of such a tumor would probably cost $500 or more.

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THE ANNUAL MEETING

The one hundred and seventieth annual meeting of the Massachusetts Medical Society will be held at the Hotel Statler, in Boston, on May 21, 22, 23 and 24. As usual, certain indispensable business of the Society will constitute the preliminary rounds, beginning at 4:30 in the afternoon of May 21 with the deliberations of that mysterious group, the Supervising Censors, after which the Cotting supper will be served prior to the annual meeting of the Council at 7:00.

A word about the Cotting repast may be in order, for time fleeteth and the memory of man is short. Dr. Benjamin E. Cotting, as president of the Society from 1874 to 1876, found the meetings of the Council so exhausting that he recognized the need of refreshment, not only for the presiding officer but for the councilors as well. Accordingly, on his retirement from office he gave to the Society the sum of $1000, the income from which was to be used for the procurement of such refreshment. In 1881 and again in 1887 he donated similar amounts, and the refreshment acquired the dignity of a luncheon and, at the annual meetings, of a supper.

On May 22 the general sessions and section meetings will commence, and the annual meeting of the Society will be held at 2:30 in the afternoon instead of at 11:00, the annual luncheon being omitted — a departure from recent custom. After the disposal of certain business and the President's report on the state of the Society the annual oration will be delivered by Dr. Donald Munro, surgeon-in-chief of the Department of Surgery of the Boston City Hospital, on the challenging subject "How Specialized Is a Specialty?"

This Ciceronian event was in times past called the Annual Discourse of the Society — and not inappropriately, a discourse being defined by the indispensable Webster as "a formal or orderly communication of thought in speech or writing; also, an extended treatment of a subject in a speech, writing, oration or the like."

In the afternoon of the same day, May 22, a reception and tea will be held at the Society's new headquarters building, 22 Fenway. The building will also be open daily for the inspection of its new owners — the fellows of the Massachusetts Medical Society — and their families and guests.

On May 23, in addition to the continuance of the general sessions, the sixty-first Shattuck Lecture will be delivered by Sir Charles R. Harington, M.A., Sc.D., F.R.S., director of the National Institute for Medical Research of Great Britain. His subject will be "The Role of the Basic Sciences in Medical Research."

In the evening the annual dinner will take place, with Dr. Richard Ford, assistant professor of legal medicine at Harvard Medical School and medical examiner of Suffolk District, as the speaker.

Further attractions of the convention will be the annual gathering of the Massachusetts Medico-Legal Society in the afternoon of May 23, the usual exhibition of works of art by members of the Massachusetts Physicians' Art Association, and last,

but not least, the annual meeting of the Woman's Auxiliary to the Massachusetts Medical Society.

This will be held on Tuesday, May 22, at the Hotel Bradford, with registration from 9:00 a.m. to 4:00 p.m., and on May 23 at the Hotel Statler, whence a bus tour will be made to the Wayside Inn.

LESSONS IN CO-OPERATION

In October, 1949, and again in June of last year anxiety was expressed in these pages over the increasing failure of many American communities to meet their charitable obligations. Charity suffereth long but cannot afford forever to operate at a deficit; the dollar that is not received cannot be spent.

An ominous cloud in the picture is that failure of private giving must eventually necessitate collection by the Government for these purposes, which would be an open invitation to the establishment of a welfare state. Of considerable importance to the people would be their loss of "the individual exercise of the impulse of generosity."

One cause of this shrinkage in the streams of philanthropy is the unco-ordinated and insistent demands of a variety of agencies, working sometimes at cross purposes to and usually in direct competition with the organized local charities. A corrective measure would be the establishment by community leaders of a united foundation to include all the worthy agencies of any importance that can be persuaded to join, and the withholding of approval from all those that refuse to co-operate.

With such an organization, sponsoring one or at most two drives a year, practically all appeals for funds could be met on an open and honest budgetary basis, with an assurance to the giver that a "cease fire" would be effected, to be binding on all recognized agencies. This is the principle on which the community-chest plans originally operated; it was a great advance over the old free-for-all system but, being based entirely on co-operative effort, it could not stand up against independent competition.

The plan of a united foundation, sponsoring a single annual drive for all agencies, was put into effect in Detroit in January, 1949, and has been described by Murray T. Bloom in the *Woman's Home Companion* for February, 1951. When this plan came into being its greatest obstacle was the refusal of the national health associations to co-operate. Gradually they fell into line, however, wholly or in part, as they sensed the community's determination to resist, until finally the American Cancer Society was the only nonco-operative body of importance that remained on the outside even if not looking in.

The success of the plan was demonstrated in October and November, 1949, when the drive for funds was held, uniting one hundred and forty-three separate appeals. This success was measured not only by the fact that the sum raised was $2,500,000 more than all the participating agencies had ever raised before but by the fact that many thousands of people were giving for the first time — and formerly perfunctory contributors were now giving more substantially, by means of various budgetary methods.

In 1950 Detroit repeated its success, and other communities have followed its leadership. Of special interest is the experience of Springfield, Massachusetts, whose community chest had not reached its goal in eight years. Here, in 1950, a united fund went over the top, exceeding by nearly $200,000 the total sum raised in the previous year.

These gratifying experiences of Detroit, Springfield and Madison, Wisconsin, will not necessarily be repeated year after year. As a new broom is supposed to sweep cleaner than the old, so the contagious enthusiasm with which a new venture is launched will often produce an initial success. New methods, new publicity and new appeals will be needed for continued successful performances.

The important lesson is that good works should not be permitted to compete against each other. The capacity for reasoned co-operative action is one of the qualities that distinguishes man from the lower animals — but how hard it is, sometimes, for man to persuade himself to reap the benefits of his own superior attainments!

DANGERS OF OXYGEN

The paper by Beale and others, published on page 710 of this issue of the *Journal*, deserves serious consideration. Although based on the observation of only a single case, it calls attention

to the risks that may occasionally arise in the administration of oxygen to patients with conditions in which the reaction to its use may be unfavorable, and cites the scanty literature on the subject.

Thanks to careful and intelligent observation and a willingness to suspect a form of treatment ordinarily thought to be harmless, serious consequences were avoided in this case.

Since oxygen is used so freely and in such a variety of conditions in this modern day, it is of value to call attention to the possibility that such therapy, which often appears to be so clearly indicated, may nevertheless lead to unexpected complications.

DARBY AND JOAN

As a corollary to its previous statement concerning the general falling off in marriages in the United States since 1945, analyzed in these columns on March 22, the Metropolitan Life Insurance Company now ventures the opinion that married life in the land of the free and the home of the brave has nevertheless become more popular during the past decade.

In the previous report produced by its battalions of statisticians, the company acknowledged the temporary increase in marriages resulting from the United Nations police action in Korea but predicted that this particular epidemic of matrimonial adventures did not necessarily reflect a continuing tendency to happy connubialism.

The other side of the shield, according to the company's more recently released researches, shows that increased popularity of wedded domesticity is evidenced by a steady ten-year gain in the proportion of persons who prefer life with the other half to a state of single wretchedness. This preference is indicated not only by the upsurge in marriages and remarriages already mentioned but also by a reduction in widowhood, over which state the interested parties ordinarily exercise only a remote control, if any.

Divorces, it is true, continue to occur, 4,000,000 more or less violent partings having taken place during the ten-year period, but the power of agglutination continues to be strong, if the high rate of remarriage is any indication.

"These facts," the statisticians of the Metropolitan Life Insurance Company somewhat primly observe, "prove that the American people have a deep and abiding faith in family life."

It is quite time for our Legislature to pass a law restraining apothecaries from selling poisonous substances without a physician's order.

Boston M. & S. J., *May 14, 1851*

OBITUARY

G. KENNETH COONSE

The Medical Staff of the Newton-Wellesley Hospital have adopted a resolution, reprinted here in part, on the death of Dr. G. Kenneth Coonse.

Dr. Coonse was born in Seattle, Washington, in 1897. He received his A.B. degree from Leland Stanford University in 1920 and was graduated from Harvard Medical School in 1924. In 1928, after serving internships at Boston City, Boston Children's and Massachusetts General hospitals, he became assistant in orthopedic surgery at Harvard Medical School and assistant orthopedic surgeon at Newton-Wellesley Hospital and the New England Peabody Home for Crippled Children. Shortly thereafter he was appointed professor of orthopedic surgery at the University of Missouri; he was also consulting orthopedic surgeon at Boone County Hospital, Columbia, Missouri, and director and chief surgeon of the Missouri State Crippled Children's Service.

He returned to Boston in 1932 as instructor in orthopedic surgery at Harvard Medical School, orthopedic surgeon, Newton-Wellesley Hospital, and junior visiting surgeon, Boston City Hospital Bone and Joint Service. From 1947 until his death he was chief of the Orthopedic Service at Newton-Wellesley Hospital. He was a member of the American Academy of Orthopedic Surgeons, the American Orthopaedic Association, the American College of Surgeons, the American Medical Association and the Massachusetts Medical Society. He was the author or co-author of sixteen papers, and contributed several chapters to Dr. Robert Mason's book "Pre-operative and Post-operative Treatment."

Dr. Coonse, who is survived by his widow and two daughters, was respected and admired by his associates. His short but fruitful life is an example of great accomplishment.

Herbert G. Dunphy, M.D.
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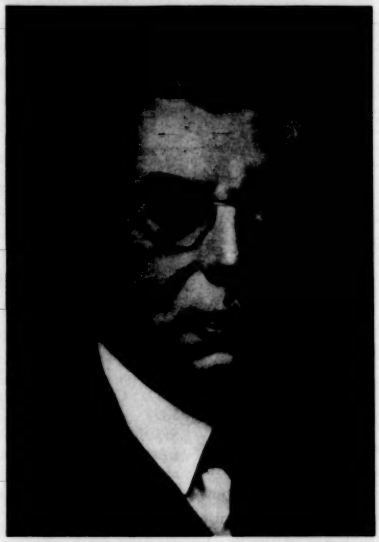

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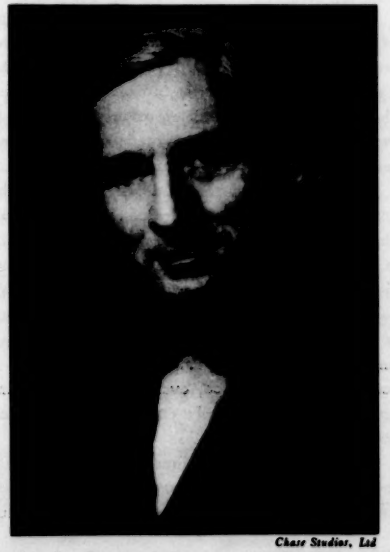

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PROGRAM OF THE ONE HUNDRED AND SEVENTIETH ANNIVERSARY OF THE MASSACHUSETTS MEDICAL SOCIETY

Monday, Tuesday, Wednesday and Thursday, May 21, 22, 23 and 24

Hotel Statler, Boston

The Registration Desk will be located on the mezzanine floor, and all who attend the meeting are requested to register.

MONDAY AFTERNOON, MAY 21

4:30 **Supervising Censors' Meeting** (PARLOR B).

6:00 **Cotting Supper for Councilors** (PARLORS A AND B).

MONDAY EVENING, MAY 21

7:00 **Annual Meeting of the Council** (GEORGIAN ROOM).

TUESDAY MORNING, MAY 22

First General Session

GEORGIAN ROOM

9:00 *A Motion Picture Entitled "Cardiac Arrhythmias."*

9:25 *A Community Heart Program.* DR. EGON E. KATTWINKEL, Boston. Chairman, Cardiac Program Committee, Newton Demonstration Program. Co-authors: DR. VLADO A. GETTING, DR. ERNEST M. MORRIS and DR. WILLIAM J. ZUKEL.

9:50 *Fatal Gastrointestinal Hemorrhage: Clinicopathological Correlations of 101 Patients.* DR. THOMAS C. CHALMERS, Boston. Instructor in medicine, Harvard Medical School; assistant physician, Thorndike Memorial Laboratory. Co-authors: DR. N. ZAMCHECK, DR. G. W. CURTIS and the late DR. F. W. WHITE.

10:15 *Anesthesia Deaths.* DR. MEYER SAKLAD, Providence. Director, Department of Anesthesiology, Rhode Island Hospital.

10:40 *Heart Disease.* DR. WILLIAM D. STROUD, Philadelphia. Professor of cardiology, University of Pennsylvania Graduate School of Medicine.

11:05 *The Convalescent Management of Anterior Poliomyelitis.* DR. KRISTIAN G. HANSSON, New York City. Associate professor, Cornell Medical College; director of physical medicine, New York Hospital and Hospital for Special Surgery.

11:30 *The Prevention of Degenerative Lesions in Diabetes.* DR. HOWARD F. ROOT, Boston. Physician-in-chief, New England Deaconess Hospital; associate in medicine, Harvard Medical School.

TUESDAY NOON, MAY 22

Section Meetings and Luncheons

12:00 m. — 2:00 p.m.

Section of Medicine

PARLOR A

Coronary Artery Disease. DR. WILLIAM D. STROUD, Philadelphia. Professor of cardiology, University of Pennsylvania Graduate School of Medicine.

Section of Radiology

PARLOR B

Diverticulosis, Diverticulitis and Carcinoma of the Colon. DR. CARLETON B. PEIRCE, Montreal, Canada. Professor of radiology, McGill University Faculty of Medicine; radiologist-in-chief, Royal Victoria Hospital.

Section of Physical Medicine

HANCOCK ROOM

Physical Medicine and Disabilities of the Shoulder. DR. KRISTIAN G. HANSSON, New York City. Associate professor, Cornell Medical College; director of physical medicine, New York Hospital and Hospital for Special Surgery.

Section of Anesthesiology

PARLOR C

Intermittent Positive Pressure Breathing. DR. MEYER SAKLAD, Providence. Director, Department of Anesthesiology, Rhode Island Hospital.

TUESDAY AFTERNOON, MAY 22

2:30 **Annual Meeting of the Massachusetts Medical Society** (GEORGIAN ROOM).

Presentation of Awards

Annual Oration (following annual meeting): How Specialized is a Specialty? DR. DONALD MUNRO, Boston, surgeon-in-chief, Department of Neurosurgery, Boston City Hospital; assistant professor of neurosurgery, Harvard Medical School; associate professor of neurosurgery, Boston University School of Medicine.

4:00–7:00 **Reception and Tea** (22 FENWAY).

Members and friends are invited to inspect the new headquarters at any time.

WEDNESDAY MORNING, MAY 23

Second General Session

GEORGIAN ROOM

9:00 *A Motion Picture Entitled "Multiple Personality."*

9:25 *The General Practitioner's Otolaryngological Opportunities and Obligations.* DR. LYMAN G. RICHARDS, Boston. Bronchoscopist, Massachusetts Eye and Ear Infirmary.

9:50 *Ophthalmological Problems in General Practice.* DR. JAMES J. REGAN, Boston. Ophthalmic surgeon-in-chief, Boston City Hospital.

10:15 *Can Accidental Trauma be Prevented?* DR. GEORGE M. WHEATLEY, New York City. Third vice-president, Metropolitan Life Insurance Company.

10:40 *The Management of Abnormal Bleeding during the Climacteric.* DR. JOHN I. BREWER, Chicago. Professor of gynecology and obstetrics, Northwestern University Medical School.

11:05 **The Shattuck Lecture.** The Role of the Basic Sciences in Medical Research. SIR CHARLES R. HARINGTON, M.A., Sc.D., F.R.S., London, England. Director of the National Institute for Medical Research.

WEDNESDAY NOON, MAY 23

Section Meetings and Luncheons

12:00 m. — 2:00 p.m.

Section of Obstetrics and Gynecology

PARLORS D AND E

Problems of Office Gynecology. DR. JOHN I. BREWER, Chicago. Professor of gynecology and obstetrics, Northwestern University Medical School.

Section of Pediatrics

PARLOR B

The Pediatrician and Accident Prevention. DR. GEORGE M. WHEATLEY, New York City. Third vice-president, Metropolitan Life Insurance Company.

Section of Ophthalmology and Otolaryngology

PARLOR A

Tumors of the Neck. DR. LOUIS H. CLERF, Philadelphia. Professor of laryngology and bronchoesophagology, Jefferson Medical College.

Section of Industrial Health

PARLOR C

Specific Problems for the Industrial Physician. DR. JAMES H. STERNER, Rochester, New York. Medical director, Eastman Kodak Company.

WEDNESDAY AFTERNOON, MAY 23

Third General Session

GEORGIAN ROOM

Symposium: New Drugs

2:00 *The Place of ACTH and Cortisone in Present-Day Practice.* DR. PETER H. FORSHAM, Boston. Junior associate in medicine, Peter Bent Brigham Hospital; instructor in medicine, Harvard Medical School.

2:25 *The Use and Abuse of Antihistaminics.* DR. WALTER S. BURRAGE, Boston. Chief of Allergy Clinic, Massachusetts General Hospital; consultant in allergy, Area No. 1, Veterans Administration.

2:50 *The Use of the Newer Antibiotics in General Practice.* DR. MAXWELL FINLAND, Boston. Associate professor of medicine, Harvard Medical School; chief, Fourth Medical Service, Boston City Hospital; associate director, Thorndike Memorial Laboratory.

3:15 *The Effectiveness of Vasodilator Drugs.* EARL R. LOEW, PH.D., Boston. Professor of physiology, Boston University School of Medicine.

3:40 *The Usefulness of the Newer Therapeutic Agents in the Treatment of Blood Disorders.* DR. MAURICE B. STRAUSS, Framingham. Chief of Medical Service, Cushing Veterans Administration Hospital.

4:05 *The Use of Anticoagulants.* DR. A. WILBUR DURYEE, New York City. Professor of clinical medicine, New York University; attending physician, University Hospital and Bellevue Hospital.

4:30 *A Motion Picture Entitled "Colostomy Closure."*

WEDNESDAY EVENING, MAY 23

6:00–7:00 **Cocktail Party** (BAY STATE ROOM).

7:00 **Annual Dinner of the Massachusetts Medical Society** (GEORGIAN ROOM).

Presiding: DR. LELAND S. MCKITTRICK, president, Massachusetts Medical Society.

Guest Speaker:

DR. RICHARD FORD, assistant professor of legal medicine, Harvard Medical School; medical examiner, Suffolk County.

Ladies may be invited to attend the dinner.

Tickets for the cocktail party and dinner *must* be procured in advance.

THURSDAY MORNING, MAY 24

Fourth General Session

GEORGIAN ROOM

9:00 *A Motion Picture Entitled "Radical Neck Dissection for Carcinoma."*

9:25 *A New Approach to the Problem of Arteriosclerosis.* DR. GEORGE V. MANN, Boston. Assistant professor of nutrition, Harvard School of Public Health; assistant in medicine, Peter Bent Brigham Hospital.

9:50 *The Problem of the Thyroid Lump.* DR. OLIVER COPE, Boston. Associate professor of surgery, Harvard Medical School; visiting surgeon, Massachusetts General Hospital.

10:15 *Jaundice.* DR. CHESTER M. JONES, Boston. Clinical professor of medicine, Harvard University; physician, Massachusetts General Hospital.

10:40 *Safeguards in Gastric Resection for Duodenal Ulcer.* DR. FREDERICK P. ROSS, Boston. Chief, Surgical Service, Veterans Administration Hospital, West Roxbury; instructor in surgery, Harvard and Tufts Medical schools.

11:05 *Hemoptysis: A diagnostic study.* DR. JOSEPH P. LYNCH, Boston. Visiting surgeon for thoracic surgery, Boston City Hospital; associate visiting surgeon for thoracic surgery, Massachusetts Memorial Hospitals; visiting thoracic surgeon, St. Elizabeth's Hospital.

11:30 *Early Diagnosis and Treatment of Cancer of the Lung.* DR. RICHARD H. OVERHOLT, Boston. Clinical professor of surgery, Tufts College Medical School.

THURSDAY NOON, MAY 24

Section Meetings and Luncheons

12:00 m. — 2:00 p.m.

Section of Surgery

PARLOR B

The Stress Reaction in Severe Burns. DR. EVERETT I. EVANS, Richmond, Virginia. Professor of surgery, Medical College of Virginia. Discusser: Dr. Oliver Cope.

Section of Dermatology

PARLOR C

Plastic Surgery as an Aid to the Dermatologist. DR. ERNEST M. DALAND, Boston. Visiting surgeon, Massachusetts General Hospital; chief of staff, Pondville Hospital.

Section of Physiology and Pathology

PARLORS D AND E

Pathology of Pulmonary Hypertension. DR. JESSE E. EDWARDS, Rochester, Minnesota. Pathologist, Section on Pathologic Anatomy, Mayo Clinic; assistant professor of pathologic anatomy, Mayo Foundation, University of Minnesota.

Section of Psychiatry and Neurology

PARLOR A

Cerebral Vascular Disease. DR. DEREK DENNY-BROWN, Boston. James Jackson Putnam Professor of Neurology, Harvard Medical School; director, Neurological Unit, Boston City Hospital. DR. EDWARD B. ALLEN, White Plains, New York. Instructor in psychiatry, Cornell University Medical School; assistant senior psychiatrist, New York Hospital, Westchester Division.

THURSDAY AFTERNOON, MAY 24

Fifth General Session

GEORGIAN ROOM

2:00 *The Newer Concepts of Fracture Treatment.* DR. GORDON M. MORRISON, Boston. Senior visiting surgeon, Boston City Hospital Orthopedic Service.

2:25 *What Can Be Done for Congenital Heart Disease?* DR. JESSE E. EDWARDS, Rochester, Minnesota. Pathologist, Section on Pathologic Anatomy, Mayo Clinic; assistant professor of pathologic anatomy, Mayo Foundation, University of Minnesota.

2:50 *Early Diagnosis of Cancer of the Prostate.* DR. J. HARTWELL HARRISON, Boston. Associate clinical professor of genitourinary surgery, Harvard Medical School; chief, Urologic Service, Peter Bent Brigham Hospital.

3:15 *Medical Aspects of Atomic Injuries.* DR. JOE W. HOWLAND, Rochester, New York. Chief, Division of Medical Service, Atomic Energy Project; professor of radiation biology, University of Rochester School of Medicine and Dentistry.

3:40 *Practical Aspects of the Treatment of Burns Caused by the Atomic Bomb.* DR. EVERETT I. EVANS, Richmond, Virginia. Professor of surgery, Medical College of Virginia.

4:05 *The Physician's Responsibility in Civil Defense.* DR. VLADO A. GETTING, Boston. Commissioner of health, Massachusetts Department of Public Health.

4:30 *A Motion Picture Entitled "Progressive Muscular Atrophies, Dystrophies and Allied Conditions."*

SCIENTIFIC EXHIBITS

BOOTH NO.

82 — BLUE CROSS, BLUE SHIELD
Sponsor: Massachusetts Hospital Service and Massachusetts Medical Service.

83 — COCCIDIOIDOMYCOSIS.
Sponsor: Tuberculosis Section, Regional Office, Veterans Administration.
Exhibitor: Boris P. Busheuff, M.D., and Mark Joress, M.D.

84 — UNION HEALTH PLANS.
Sponsor: Massachusetts Department of Public Health.
Exhibitor: Robert E. Archibald, M.D.

85 — ACTIVITIES OF THE MASSACHUSETTS MEDICAL SOCIETY.
Exhibitor: Massachusetts Medical Society.

86 — EXAMINING THE SCHOOL CHILD.
Sponsor: Massachusetts Department of Public Health.
Exhibitor: Department of School Health and the Massachusetts School Physicians' Association.

87-91 — PILOT HEALTH PROTECTION CLINIC.
Sponsor: Massachusetts Department of Public Health.
Exhibitor: Claire Ryder, M.D., and associates.

CORRIDOR — SURGICAL ANATOMY AND TREATMENT OF FACIAL PARALYSIS.
Sponsor: Lahey Clinic.
Exhibitor: Frank Lathrop, M.D.

CORRIDOR — BACTERIAL MENINGITIS IN CHILDHOOD.
Sponsor: The Children's Medical Center.
Exhibitor: John A. V. Davies, M.D.

TECHNICAL EXHIBITORS 1951

	BOOTH NO.
Abbott Laboratories	59
Alkalol Company	25
Ames Company, Inc.	45
Ayerst, McKenna & Harrison, Ltd.	29
Baby Development Clinic	7
Chester A. Baker Laboratories, Inc.	81
Beech-Nut Packing Company	40
Bilhuber-Knoll Corporation	37
Ernst Bischoff Company, Inc.	11
The Borden Company	73
Boston Medical Supply Company	10
Brewer & Company, Inc.	47 & 48
Burroughs Wellcome & Company, Inc.	27
Cambridge Instrument Company, Inc.	64
Camel Cigarettes	13 & 14
Cardiotron (Sam Mushlin)	8-A
Carnation Company	53
Ciba Pharmaceutical Products, Inc.	42
Coca-Cola Company	16 & 17
Crosbie-Macdonald	35
Davies, Rose & Company, Ltd.	43
Denver Chemical Manufacturing Company, Inc.	74
Dietene Company	60
Doho Chemical Corporation, Inc.	22
S. F. Durst & Company, Inc.	15
Dy-Dee Service, Inc.	12
Endo Products, Inc.	56
C. B. Fleet Company, Inc.	46
General Electric X-Ray Corporation	5
Gerber's Baby Foods	71
Laurence E. Gott	23
J. E. Hanger, Inc.	38
Hanovia Chemical & Manufacturing Company	55
H. J. Heinz Company	65
Dan Hibel, Inc.	Stage C & D
Hoffmann-LaRoche, Inc.	44
Ives-Cameron, Inc.	2
George Laben	32
Lederle Laboratories Division	77
Eli Lilly and Company	20
E. F. Mahady Company	Stage A & B
M & R Dietetic Laboratories, Inc.	78
McNeil Laboratories, Inc.	80
Mead Johnson & Company	51
Medical Clearing Bureau, Inc.	61
Medical Protective Company	30
Medco Products Company	9
Merck & Company, Inc.	70
The Wm. S. Merrell Company	33
The National Drug Company	36
The Nestlé Company	58

New England Dairy & Food Council, Inc. 6
Otis Clapp & Son, Inc. 3
Parke, Davis & Company 66
E. L. Patch Company 24
Pet Milk Company ..... 75 & 76
Charles Pfizer & Co., Inc. 49
Philip Morris & Company, Ltd., Inc. 52
L. & B. Reiner ..... 18 & 19
A. H. Robins, Inc. 1
Sanborn Company 57
Sandoz Pharmaceuticals 28
Saratoga Springs Authority 34
Schering Corporation 68
G. D. Searle & Company 69
Sharp & Dohme, Inc. 63
Smith, Kline & French Laboratories 39
Spencer, Inc. 50
E. R. Squibb & Sons 72
Swift & Company 79
Tailby-Nason Company 21
U. S. Vitamin Corporation 26
Universal Products Corporation 8
Upjohn Company 67
Vaisey-Bristol Shoe Company, Inc. 62
Vanpelt and Brown, Inc. 4
Walker Vitamin Products, Inc. 92
White Laboratories, Inc. 31
Winthrop-Stearns, Inc. 54
Wyeth, Inc. 41

BOSTON MEDICAL LIBRARY

ANNUAL MEETING

MONDAY AFTERNOON, MAY 21

PARLOR C

4:30 p.m.

MASSACHUSETTS MEDICO-LEGAL SOCIETY ANNUAL MEETING

WEDNESDAY AFTERNOON, MAY 23

PARLOR C

2:30 p.m.

EXHIBITION OF WORKS OF ART by Members of the Massachusetts Physicians' Art Association

FOURTH FLOOR

Daily: 9:00 a.m. — 5:00 p.m.

MAY 22, 23 and 24

MASSACHUSETTS SCHOOL PHYSICIANS' ASSOCIATION ANNUAL MEETING

PARLOR B

WEDNESDAY, MAY 23

PROGRAM

2:30 *Feet and Knees.* William T. Green, M.D.

3:30 Meet Dr. Dean S. Luce of Canton, Mass., — school physician for twenty-five years and chosen Family Doctor of the Year, — who will speak for fifteen minutes.

3:45 *Subclinical Epilepsy in Childhood.* William G. Lennox, M.D.

ANNUAL GOLF TOURNAMENT

DEDHAM COUNTRY AND POLO CLUB
DEDHAM, MASSACHUSETTS

WEDNESDAY AFTERNOON, MAY 23

1:00 p.m.

DR. WILLIAM R. HILL, JR., *Chairman*

520 Commonwealth Avenue, Boston

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MARCH, 1951

RÉSUMÉ

DISEASE	MARCH 1951	MARCH 1950	SEVEN-YEAR MEDIAN
Chancroid	1	2	3
Chicken pox	1783	2412	2412
Diphtheria	13	15	21
Dog bite	850	819	820
Dysentery, bacillary	0	15	9
German measles	154	351	258
Gonorrhea	145	211	295
Granuloma inguinale	0	1	1
Lymphogranuloma venereum	0	1	2
Malaria	0	0	8
Measles	1840	1525	3081
Meningitis, meningococcal	5	10	10
Meningitis, Pfeiffer-bacillus	2	5	4
Meningitis, pneumococcal	2	3	3
Meningitis, staphylococcal	0	0	0
Meningitis, streptococcal	0	0	1
Meningitis, undetermined	11	3	4
Mumps	1758	1343	1575
Poliomyelitis	2	1	1
Salmonellosis	5	11	8
Scarlet fever	560	653	892
Syphilis	117	167	364
Tuberculosis, pulmonary	221	225	227
Tuberculosis, other forms	20	15	20
Typhoid fever	2	0	1
Undulant fever	0	1	5
Whooping cough	195	776	592

COMMENT

The only disease notably above the seven-year median for March is mumps.

Diseases whose prevalence is below the seven-year median are chicken pox, diphtheria, bacillary dysentery, German measles, measles, meningococcic and Pfeiffer-bacillus meningitis, salmonellosis, scarlet fever, undulant fever and whooping cough.

This is the first time since 1942 that no cases of bacillary dysentery were reported in March. It is also the first time since 1937 that no cases of undulant fever were reported during March.

The number of cases of diphtheria is the lowest reported for the month in eight years, and March is the nineteenth consecutive month for which the number of cases reported is lower than for the same month of the previous year.

The prevalence of German measles is the lowest in three years, and that of meningococcal meningitis the lowest in four years.

The 560 cases of scarlet fever are the fewest reported for March since 1918, and the 195 cases of whooping cough are the fewest ever recorded for this month.

GEOGRAPHICAL DISTRIBUTION OF CERTAIN DISEASES

Anthrax was reported from: Haverhill, 1.

Diphtheria was reported from: Boston, 4; Grafton, 1; North Attleboro, 1; Weymouth, 7; total, 13.

Encephalitis, infectious, was reported from: Chicopee, 1; Fall River, 1; Fitchburg, 1; Greenfield, 1; Newton, 1; total, 5.

Hepatitis, infectious, was reported from: Camp Edwards, 3; New Bedford, 1; Norwood, 1; Wrentham, 7; total, 12.

Meningitis, meningococcal, was reported from: Boston, 2; Camp Edwards, 1; Salem, 1; Scituate, 1; total, 5.

Meningitis, Pfeiffer-bacillus, was reported from: Lawrence, 1; Rehoboth, 1; total, 2.

Meningitis, pneumococcal, was reported from Boston, 1; Lowell, 1; total, 2.

Meningitis, mumps, was reported from: Somerville, 1.

Meningitis, undetermined, was reported from: Braintree, 1; Bridgewater, 1; Cambridge, 1; Deerfield, 1; Greenfield, 1; Lawrence, 1; Holden, 1; Peabody, 1; Wellesley, 1; Worcester, 2; total, 11.

Poliomyelitis was reported from: South Hadley, 1; Stoughton, 1; total, 2.

Salmonellosis was reported from: Beverly, 1; Danvers, 2; Medford, 1; Salem, 1; total, 5.

Septic sore throat was reported from: Adams, 2; Boston, 4; Greenfield, 1; Lynn, 1; Millbury, 1; Norton, 4; total, 13.

Tetanus was reported from: Holyoke, 1.

Trachoma was reported from: Norton, 1.

Typhoid fever was reported from: Boston, 1; Melrose, 1; total, 2.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

L'Ipersessualità come Fattore Degenerogeno. Prof. Marino Benvenuti, director, Ospedale Neuro-Psichiatrici di Aquila. 8°, paper, 208 pp. Pisa: Omnia Medica, 1950. 2200 lira.

The material in this monograph is based on a study of two families and the literature on the subject. A bibliography is appended to the text. The book is well published and should be available to all persons interested in the scientific study of hypersexuality.

The Ethical Basis of Medical Practice. By Willard L. Sperry, dean of the Harvard Divinity School. With a foreword by J. Howard Means, M.D. 8°, cloth, 185 pp. New York: Paul B. Hoeber, Incorporated, 1950. $2.50.

This small book is based on a lecture given to the house officers of the Massachusetts General Hospital. The author is more concerned with defining and clarifying basic moral problems than providing a set code of rules. He refers to the teachings from the earliest times to the time of Richard Cabot and Albert Schweitzer. In two chapters he discusses the pros and cons of euthanasia. The book is well published and should be in all medical and legal libraries.

Sexual Deviations. By Louis S. London, M.D., and Frank S. Caprio, M.D. With a foreword by Nolan D. C. Lewis, M.D., professor of psychiatry, Columbia University, College of Physicians and Surgeons, director, New York State Psychiatric Institute and Hospital, and editor, *Psychoanalytic Review.* 8°, cloth, 702 pp. Washington, D. C.: The Linacre Press, 1950. $10.00.

The text of this new book is divided into three parts: theoretical considerations (including a short historical survey), and the genesis of sexual aberrations; clinical data (case histories), and the psychodynamics of sexual deviations; therapeutic and sociologic aspects. The second part discusses all the types of deviations. The text is concluded with a glossary of terms and a bibliography. There is a good index, and the book is well published. It should be in all special collections on the subject.

Atlas of Human Anatomy: Descriptive and regional. By M. W. Woerdeman, M.D., F.R.N.A. Sc., professor of anatomy and embryology and director of the Department of Anatomy, University of Amsterdam. 4°, cloth. Vol. I. *Osteology, Arthrology, Myology.* 512 pp., with 512 plates. Vol. II. *Splanchnology, Angeiology, Nervous System and Organs of Sense.* 642 pp., with 642 plates. Philadelphia: Blakiston Company, 1950. $10.00 for a single volume; $18.00 for the two volumes.

The new atlas of 1152 fine plates was printed in Holland. The nomenclature is entirely in Latin and is based on the B.N.A. It was originally planned to issue the atlas in three volumes, but it later was decided to combine Volumes II and III into one volume, the present Volume II of the set. The plate work is excellent. Color is used sparingly but where necessary. The work is up to the standard of the finest German publications. Comprehensive indexes are appended to each volume. The work should be in all anatomic collections.

Compulsory Medical Care and the Welfare State: An analysis based on a special study, sponsored by the National Physicians Committee, of governmentalized medical care systems on the continent of Europe and in England. By Melchior Palyi, Ph.D. 8°, paper, 156 pp. Chicago: National Institute of Professional Services, Incorporated, 1950. $2.00.

Dr. Palyi lived for twenty-five years in Europe and also taught in the United States at the Universities of Chicago and Wisconsin and Northwestern University. He made two trips to western Europe in 1948 and 1949. In this monograph he discusses socialized medicine, its introduction, growth and extension in the various European countries, its present status and the evils inherent in medicine by a government.

NOTICES

WOLBACH LECTURE

The third annual S. Burt Wolbach Lecture, on "Isolation and Characterization of Tissue Structure," will be given by Dr. George M. Hass at the Peter Bent Brigham Hospital Amphitheatre on Monday, May 14, at 5:00 p.m. Dr. Hass is Rush Professor of Pathology, University of Illinois, director of laboratories, Presbyterian Hospital, Chicago, and pathologist-in-chief, pro tempore, of the Children's Medical Center, Boston.

SOUTH END MEDICAL CLUB

The next luncheon-meeting of the South End Medical Club will be held at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, May 15, at 12 noon.

Dr. Mark Aisner, assistant professor of medicine, Tufts College Medical School, junior visiting physician, Boston City Hospital, staff member, Faulkner Hospital, and attending physician, Veterans Hospital, West Roxbury, will discuss the subject "Radicular Syndromes Simulating Cardiac Pain." Physicians are cordially invited to attend.

NEW ENGLAND CARDIOVASCULAR SOCIETY

The next meeting of the New England Cardiovascular Society will be presented by the New England Center Hospital at the New England Mutual Hall, 225 Clarendon Street, Boston, on Monday, May 21, at 8 p.m., Dr. Samuel H. Proger presiding.

PROGRAM

Enterococcal Endocarditis as a Complication of Urologic Instrumentation. John J. Finn, Jr., M.D.

Electrocardiographic Abnormalities in Patients Exhibiting Anxiety. Heinz Magendantz, M.D.

Experimental Studies on the Use of the Venous System as a Means of Delivering Arterial Blood to the Lower Extremity. Thomas H. Palmer, Jr., M.D.

Differences in the Biochemistry of Heart and Skeletal Muscle. Gerhard Schmidt, M.D.

Functional Replacement of the Heart by Pumps. Sigmund A. Wesolowski, M.D.

Hypochloremia and the Low Salt Syndrome in Congestive Heart Failure. William B. Schwartz, Jr., M.D.

Interested physicians and medical students are cordially invited to attend.

MASSACHUSETTS PHYSICIANS ART ASSOCIATION

The annual exhibition of works of art of members of the Massachusetts Physicians Art Association will take place during the annual meeting of the Massachusetts Medical Society, May 21-24, at the Hotel Statler, Boston. Those interested in exhibiting should deliver their work to Mr. James F. Ballard at the Boston Medical Library during the week of May 13.

If any physician wishes to exhibit his work in Atlantic City at the American Physicians Art Association Exhibition, it is recommended that he send his exhibits at least three weeks in advance of the opening date.

NEW ENGLAND DIABETES ASSOCIATION

The annual meeting of the New England Diabetes Association will be held on Monday, May 28 in the Beth Israel Hospital auditorium, at 8 p.m.

PROGRAM

The Modern Simplification of the Diabetic Diet for Patient and Doctor. Samuel B. Beaser, M.D.

The Therapy of the Abnormal Capillary Fragility in Diabetes Mellitus. Maurice H. Shulman, M.D., and Samuel B. Beaser, M.D. (To be read by Maurice H. Shulman, M.D.)

A Survey of the Cardiac Status of Diabetic Clinic Patients. Samuel Stearns, M.D., Samuel B. Beaser, M.D., and Paul Zoll, M.D. (To be read by Samuel Stearns, M.D.)

A Survey of the Peripheral Vascular Status of Diabetic Clinic Patients. Samuel B. Beaser, M.D., Arnold Starr, M.D., and Robert R. Shapiro, M.D. (To be read by Robert R. Shapiro, M.D.)

Arterial Occlusions and Interarterial Anastomosis in the Presence of Gangrene of the Leg. Stanford Wessler, M.D.

Members of the Association, other physicians, and medical students are cordially invited to attend.

NEW ENGLAND RHEUMATISM SOCIETY

The annual meeting of the New England Rheumatism Society will be held on Tuesday, May 29, in the cafeteria of the Boston Dispensary, 25 Bennet Street, Boston, at 6:15 p.m. A scientific program, for members and guests, will be given at 8:00 p.m. in the Stearns Auditorium of the New England Center Hospital.

INTERNATIONAL ACADEMY OF PROCTOLOGY

The Third Annual Convention of the International Academy of Proctology will be held at The Mayflower in Atlantic City, New Jersey, on June 7 and 8.

The scientific session of the program will feature the more recent developments in proctology through papers presented by outstanding speakers. These sessions will be open to members of the medical profession without charge.

The annual banquet of the Academy will take place on Thursday evening, June 7.

Further information concerning the convention and a copy of the program may be obtained by writing to the secretary, Dr. Alfred J. Cantor, International Academy of Proctology, 1819 Broadway, New York 23, New York.

SOCIETY MEETINGS AND CONFERENCES

May 14. Wolbach Lecture. Page 741.

May 15. South End Medical Club. Page 741.

May 15. Boston City Hospital House Officers' Association. Page 698, issue of May 3.

May 16. New England Obstetrical and Gynecological Society. Hillcrest Country Club, Leicester, Massachusetts.

May 16-18. American Association of Genito-Urinary Surgeons. Page 160, issue of January 25.

May 21. New England Cardiovascular Society. Page 741.

May 21-24. Massachusetts Physicians Art Association. Notice above.

May 21-25. International Society of Orthopaedic and Traumatic Surgery. Page 422, issue of March 15.

May 22-24. Massachusetts Medical Society. Annual meeting. Hotel Statler, Boston.

May 23. School Physicians' Association. Page 614, issue of April 19.

May 23. U. S. Naval Reserve Volunteer Medical Unit No. 1-1. Page 698, issue of May 3.

May 24-26. American Goiter Association. Page 384, issue of March 8.

May 28. New England Diabetes Association. Notice above.

May 29. New England Rheumatism Society. Notice above.

June 6-9. American Proctologic Society. Page 698, issue of May 3.

June 7 and 8. International Academy of Proctology. Notice above.

June 7-9. American Radium Society. Page 656, issue of April 26.

June 7-10. American College of Chest Physicians. Page 494, issue of March 29.

June 9 and 10. American Society for the Study of Sterility. Page 274, issue of February 15.

June 11-15. American Medical Association. Annual Session. Atlantic City, New Jersey.

June 11-15. Physicians' Art Exhibit at A.M.A. Meeting. Page 614, issue of April 19.

June 15-17. American Electroencephalographic Society. Page 346, issue of March 1.

June 18-20. American Neurological Association. Page 614, issue of April 19.

June 20-23. American Orthopaedic Association. Page 422, issue of March 15.

September 4-8. American Congress of Physical Medicine. Page 238, issue of February 8.

September 19. American Medical Writers' Association. Page 1066, issue of December 28.

September 19-21. Mississippi Valley Medical Society. Page 1066, issue of December 28.

September 30-October 2. New Hampshire Medical Society. Annual Meeting. Equinox House, Manchester, Vermont.

October 31. New England Obstetrical and Gynecological Society. Hotel Somerset, Boston.

November 10-21. Pan-Pacific Surgical Association. Page 680, issue of October 26.

July 8-11, 1952. Thirteenth British Congress of Obstetrics and Gynaecology. Page xv, issue of December 14.

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING THURSDAY, MAY 17

THURSDAY, MAY 17

*9:00-10:00 a.m. Grand rounds. Robert Breck Brigham Hospital.

*9:00-11:00 a.m. Medical grand rounds. Joseph H. Pratt Diagnostic Hospital.

FRIDAY, MAY 18

*9:00-10:00 a.m. Medical conference. Joseph H. Pratt Diagnostic Hospital.

*9:00 a.m.-12:00 m. Combined medical and surgical staff rounds. Peter Bent Brigham Hospital.

*10:00 a.m. Surgical clinic. South End Health Unit, 57 East Concord Street, Boston.

*12:00 m.-1:00 p.m. Patient presentation. Dowling Amphitheatre, Boston City Hospital.

*12:00 m.-1:00 p.m. Pediatric clinicopathological conference. Joseph H. Pratt Diagnostic Hospital.

*1:30 p.m. Tumor clinic. Outpatient Department, Mount Auburn Hospital, Cambridge.

SATURDAY, MAY 19

*9:00-10:00 a.m. Surgical grand rounds. Joseph H. Pratt Diagnostic Hospital.

MONDAY, MAY 21

*11:30 a.m.-12:15 p.m. Clinical conference. South End Health Unit, 57 East Concord Street, Boston. Dr. Cleaveland Floyd in charge.

*12:15-1:15 p.m. Clinicopathological conference. Main Amphitheatre, Peter Bent Brigham Hospital.

*8:00 p.m. New England Cardiovascular Society. New England Mutual Hall, 225 Clarendon Street, Boston.

TUESDAY, MAY 22

*9:00-10:00 a.m. Medical conference. Joseph H. Pratt Diagnostic Hospital.

*12:15-1:15 p.m. Clinicoroentgenological conference. Peter Bent Brigham Hospital.

*1:30-2:30 p.m. Pediatric rounds. Burnham Memorial Hospital for Children, Massachusetts General Hospital.

WEDNESDAY, MAY 23

*9:00-10:00 a.m. Medical conference. Joseph H. Pratt Diagnostic Hospital.

*11:00 a.m.-12:00 m. Medical clinic, including psychiatric conferences. (Children's Medical Center.) Amphitheatre, Children's Hospital.

*12:00 m. Surgical discussion. Margaret Jewett Hall, Mount Auburn Hospital, Cambridge.

*12:00 m.-1:00 p.m. Clinicopathological conference. (Children's Medical Center.) Amphitheatre, Peter Bent Brigham Hospital.

*2:00-3:00 p.m. Combined clinic of all services. (Children's Medical Center.) Amphitheatre, Children's Hospital.

*Open to the medical profession.